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Case No.

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1983

THOMAS A. GARDNER,

Petitioner,

vs.

TEC SYSTEMS, INC., a corporation of Wisconsin, and ROY E. DOWNHAM, JACK ECKELAERT and JOHN W. FROST,

Respondents.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

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QUESTIONS PRESENTED

1. Where the best prior art was considered by the Patent Office, does the presumption of validity of 35 USC Sec. 282 and Rule 52 of the Federal Rules of Civil Procedure require that the Trial Court make findings pointing out where the Patent Office committed error in granting the patent?

2. Can the presumption of validity be overcome where the scientific evidence before the Trial Court corroborates the evidence before the Patent Office and the Courts below misapprehended the significance of the evidence?

3. Where there was no evidence established to be representative of the prior art, is a holding of invalidity based on non-representative prior art a taking of property without due process of law?

4. Can the presumption of validity

be overcome by test evidence of non-prior art compared with test evidence of the invention?

5. Can there be clear and convincing evidence of invalidity to overcome the presumption of validity where findings are contrary to the only evidence presented?

PARTIES BELOW

All parties are named in the case caption.

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THOMAS A. GARDNER,

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TEC SYSTEMS, INC., a corporation of Wisconsin, and ROY E. DOWNHAM, JACK ECKELAERT and JOHN W. FROST,

Defendants.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Petitioner, Thomas A. Gardner, respectfully prays that a writ of certiorari issue to review the judgment entered on January 12, 1984, by the United States Court of Appeals for the Federal Circuit.

OPINIONS BELOW

The District Court held the patent in suit invalid and denied post-judgment motions. Patentee and Plaintiff Gardner appealed from the judgment and denial of post-judgment motions.

The Court of Appeals for the Federal Circuit sitting in banc for the first time in a patent case affirmed the holding of invalidity and declined a request for rehearing. Its decision is reported at 725 F.2d 1338 and 220 USPQ 777.

JURISDICTION

The judgment of the Court of Appeals is dated January 16, 1984. A request for extension of time to file a petition for rehearing to Feb. 6, 1984, was granted and a timely petition for rehearing was declined on March 22 and this petition for writ of certiorari was filed within 90 days of that date. The

jurisdiction of this Court is invoked under 28 USC 1254 (1).

STATUTES INVOLVED

Questions 1, 2 and 4 involve 35 USC 282 which provides in its pertinent portions:

> "A patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. The burden of establishing invalidity of a patent or any claim

thereof shall rest on the party asserting such invalidity."

STATEMENT OF THE CASE

Jurisdiction of the Courts below rests on 28 USC 1338 (a) and 28 USC 1291 and 28 USC 1295.

The patent in suit revolutionized the drying art in the process printing business. Prior to the Gardner invention, there was no commercially available apparatus or technique to support, stabilize and position a web freshly printed on both sides and move it through a high velocity air dryer.

Prior art attempts to dry webs printed on both sides by means of high velocity hot air impingement had foundered on the rock of inability to support and transport such a web through a dryer without contact of the web with parts of the apparatus. This contact with web surfaces caused smudging of the ink,

deposit of ink smears on the apparatus, etc. This problem inhibited full utilization of high speed printing presses, for example, which would print on both sides of the web at the same time.

The Gardner invention solved the problem and brought into commercial use an entirely new and commercially practical "high velocity dryer" in which the web is positioned out of contact with any physical structure and transported through the dryer so that ink on both sides of the web may be dried simultaneously. This created a completely new industry and the invention was licensed by Plaintiff Gardner to Overly, Inc. and achieved great commercial success. In the period from 1963 when the invention was introduced into the market until 1969 when the Defendants commenced their infringing activities, the Gardner floater dryer incorporating the web po-

sitioning air bars of the instant invention had captured the major share of the market for dryers in the printing industry.

The web supporting and drying problems that were ultimately solved by the patent in suit are best described in a paper presented by Gardner announcing the Gardner air bar achievement to an International Symposium sponsored by the Canadian Pulp and Paper Association in 1964, contained in file history of the patent in suit (PX 43) Col. 1, page 3:

> "The possibility of using high-velocity air dryers with their tremendous drying capacity on both sides of a web had been an intriguing idea for several years, but there were serious obstacles to doing it. Although it was possible to secure reasonably balanced static pressures above and below a web in opposed high velocity dryers, the extreme turbulence of the high energy air jets caused the web to vibrate wildly at random across its entire expanse."

The prior art Vits patent 3,181,250

was the principal reference in the Patent Office and also at the trial of this action. A Vits dryer had not achieved any commercial success or was not in use in the United States at the time of the trial. Vits taught use of low velocity air to avoid turbulence and wide spacing of the bars from the web to prevent the bar's contact with the web which would smear the ink.

During 1962 Gardner experimented with a large number of web supporting devices, including a construction similar to the Vits patent, and finally, in 1963, came up with the web stabilizer air bar of the patent in suit which enabled use of high velocity air. The air bar formed a uniform zone of superatmospheric pressure spanning the web that positioned and stabilized the web without contact with the air bar.

The key to the invention was the lo-

cation of the suppression plate as close to the floating web as possible and closer than the air nozzles to cause a high rate of pressure drop of the outflowing air. The difference in rate of pressure drop is inversely proportional to the cube of the clearance between web and air bar suppression plate. The difference in pressure drop between Gardner and the prior art was a difference of almost 140 times. It is the tremendous increase in this friction on the outflowing air which maintains positive pressure up to the web edge and eliminates the negative pressure or suction and web contact at the edge of the web found in the prior art Vits patent.

The Gardner patent in Col. 2, lines 5-22 (A 70) provides:

> "In the desired practice of the invention, the clearance between the suppression plate and the web is so slight that the slight loss of pressure resulting from flow

out of the ends of the space does not usually detract measurably from the result. In fact, parallel flow from below and above the web laterally over the free margins at the sides of the web has very important advantages in smoothing out wrinkles or ruffles in the margin, the effect being so pronounced that manual displacement of the margines is followed by restoration of the margin to its initial position with a snap action as if the margin were subject to the action of a spring.

As will be explained, if the suppression plate is far removed from the web the effect will be lost."

Claim 1 (A 72) of the Gardner patent sets forth the parameters for positioning the suppression plate.

"1. Means for positioning a moving web by subjecting a transverse zone spanning the web to uniform static pressure, said positioning means comprising a suppression plate extending transversely across said web and spaced therefrom as closely as is mechanically practicable, nozzle means no closer to the web than said plate and having slots which extend substantially continuously across said web and are spaced at opposite sides of said plate, the minimum spacing between the web and said plate being a distance at least approxi-

mately twice as great as the nozzle slot width, the maximum spacing of the plate from the web never being greater than the width of the plate, the product of the width of the plate and the spacing of the plate from the web being less than twenty times the nozzle slot width, and means for discharging gas under pressure through the nozzle slots for defining a zone of static pressure between the plate and the web."

The Gardner patent (A 67) issued in 1969 and this suit was brought shortly thereafter. Trial of the action was held on various days in 1976 and 1977. The trial was concluded on March 7, 1977, and a decision was rendered on August 2, 1982.

The Trial Court relied principally on the Vits patent in invalidating the claims, notwithstanding its thorough consideration by the Patent Office.

The Vits patent 3,181,250 was the principal art considered by the Court in holding the patent invalid. In Finding 71 (A 50), that Court stated:

"By far the most pertinent prior art which must be considered by the Court is the Vits patent No. 3,181,250 (DX304)".

The Vits '250 patent was thoroughly considered in the Patent Office over a period of six years and was relied upon as the principal reference by Examiners John Camby and Frederick L. Matteson, Jr., in at least five actions rejecting the claims in the series of three applications which eventually resulted in the patent in suit. The Vits '250 patent was also the principal reference discussed in a fifteen page appeal brief. Subsequent to the filing of the brief, the claims in suit were allowed after a conference between Examiner Matteson and conferee examiners H. B. Ramey and James W. Werthauer.

DECISION OF THE COURT OF APPEALS FOR THE FEDERAL CIRCUIT

The Court of Appeals affirmed the

holding of invalidity based on the Vits patent.

The Court of Appeals stated on page 14 (A 14):

> "35 USC 103, as applied by the Supreme Court in Graham v. John Deere, makes the factual inquiry into the scope and content of the prior art the appropriate starting point for consideration of obviousness. Thus, we start with the trial court's essentially unchallenged finding that Vits is unquestionably the most pertinent prior art. After painstaking review of the opinion of the trial court and the briefs on appeal, we have found neither a finding nor a contention which suggests that any of the remaining references teach anything not found in Vits. We therefore premise our reasoning, as did the trial court in essence, on Vits."

On page 16 (A 16):

> "As for the standard of proof TEC had to meet to prove it, we note that the claims were allowed over Vits, and that no reference shows more than does Vits. It is thus perfectly clear that TEC in effect asked the trial court to cover precisely the same ground as that covered by the PTO in its quasi-judicial determination of patentability that it is authorized and required by statute to render.

Therefore, TEC's burden on this point was a heavy one."

The Trial Court's evidentary basis for invalidating the Gardner patent was that comparative tests of invention vs. prior art did not demonstrate a difference in kind or performance of the invention vs. the prior art.

During prosecution of the patent application in the Patent Office, Gardner submitted comparative tests of a Gardner air bar and a Vits air bar. Gardner attempted to show the difference between the close positioning of the suppression plate in the Gardner air bar with the wide spacing in Vits. The test curves are reprinted on page 19 (A 19) of the Court of Appeal's decision. The Trial Court regarded these tests as non-probative (Finding 38, A 37) because the Vits bar had a nozzle slot width approximating the dimension of the Gardner test bar rather than being scaled from the

drawings of Vits patent. It was error for the Court to rely on the scale of patent drawings where the dimensions or scale are not identified in the specification. In re Chitayat (CCPA 1969), 408 F.2d 475, 161 USPQ 224, 226. Moreover, TEC admitted that the Vits patent drawings were not to scale. Incredibly, the Court of Appeals in referring to the problem of scale of the Vits test bars and ignoring the fact that the Vits patent drawings were not to scale and could not be relied upon, stated (A 23):

> "The fact is that Gardner changed the Fig. 10 nozzle dimensions in building his version of Vits bar and it was for the Trial Court to evaluate the probative weight to assign to the tests which were made with it. We cannot find reversible error in the Trial Court's evaluation of that test evidence on a fact issue."

The Trial Court disregarded the Patent Office tests but relied heavily

on the "wooden block tests" at the trial as showing an absence of any difference in characteristics between a Gardner air bar and a Vits air bar. However, the Trial Court misapprehended the Vits air bar used in the wooden block tests and was of the belief that it was scaled from the patent drawings, when, in fact, it was an air bar with the same dimensions as the Vits bar tested by Gardner before the Patent Office. Hence, on the one hand the Court rejected Plaintiff's file wrapper tests as not probative but accepted Defendants' tests with the same equipment which also was not copied to the scale of the patent drawings of Vits under the misapprehension that the Vits air bars used in the tests were scaled from the drawings.

The Court of Appeals recognized that the Trial Court misapprehended the character of the Vits air bar used in the

wood block tests by its statement referring to the wood block tests (A 21):

> "At trial, Gardner was also able to elicit from Dr. Dane additional testimony about the pressure at the web edges, which confirmed that a Gardner version of Vits produces suction there." (emphasis supplied)

Hence, the Court of Appeals recognized that even with the wood block tests there was negative pressure at the web edges with the Vits air bar but neither Court understood the significance of the negative pressure in the prior art Vits device.

Gardner characterized the negative pressure of Vits in the file wrapper as follows:

> "Exhibit 4 shows that it is impossible in the use of the Vits nozzle heads to achieve any uniformity or stability. A negative pressure at the margin of a web is a factor which leads to great instability and may result in frictional contact of the web with the nozzle. The same result follows from the fact that

> the pressure does not stay uniform across the width of the web, since a point at which the pressure is relatively high at one face of the web may be opposite to a lower pressure at the other face of the web, thereby causing flexing and bodily displacement of the web, in some case contacting the nozzle head."

Negative pressure or suction renders an air bar inoperable because it causes the web to hit the bar and smear the ink. Suction at the web edge is a fatal defect. Yet the Court of Appeals found no error with the Trial Court's finding 75 (A 53):

> "The evidence at trial never showed that the departing from the dimensional limitations would necessarily cause an air bar to function or fail."

Finding 86 (A 59):

> "The dimensional limitations of Gardner's '477 are essentially meaningless."

All tests of Vits bars before the Court with the plate between the nozzles widely spaced from the web, and outside

of the claim dimensional limitations whether they were file wrapper tests or Defendants' wood block tests, showed negative pressure or suction at the web edge and hence failure. In the face of all the evidence, the foregoing findings of the Trial Court are unsupportable by any quantum or quality of evidence.

Hence, not only were the Courts below in error in rejecting Gardner's tests in the Patent Office, the Trial Court based its decision of "no difference between invention and prior art" on tests of non-prior art, i.e., a bar not scaled from or otherwise established to be representative of any prior art.

REASON FOR GRANTING THE WRIT

Plaintiff GArdner has not been accorded the benefit of the presumption of validity. In possibly the last reference to the presumption of validity by

this Court, this Court said in Blonder-Tongue Lab., Inc. v. University of Illinois Found. (1971) 402 U.S. 313, 334, 91 S.Ct. 1434, 1446:

> " * * * patentees are heavily favored as a class of litigants by the patent statute. Section 282 of the Patent Code provides, in pertinent part:
>
> > 'A patent shall be presumed valid. The burden of establishing invalidity of a patent shall rest on a party asserting it.'
>
> If a patentee's expense is high though he enjoys the benefits of the presumption of validity, the defendant in an infringement suit will have even higher costs as he both introduces proof to overcome the presumption and attempts to rebut whatever proof the patentee offers to bolster the claims."

The Court of Appeals recognized that the Trial Court did not structure its analysis of validity around the presumption.

The Court of Appeals in referring to the Trial Court's opinion and its only

reference to the presumption of validity stated on page 18 (A 18):

> "This last-quoted passage is especially significant in that it contains the trial court's only mention of the presumption of validity. Despite its awareness of controversy concerning the presumption, the trial court never concluded: (1) whether Carlisle had in fact been considered by the examiner; (2) whether Carlisle shows anything not shown in Vits, which was exhaustively considered by the examiner; (3) who had the burden of proving facts concerning validity or invalidity at trial; and (4) by what standard of proof those facts had to be shown."

The generalized statements in prior decision of this Court relating to the presumption of validity are of no aid to the Trial Courts in applying the presumption of validity. Specific guidelines of this Court as to certain mandatory fact findings should be required to implement the congressional intent expressed in 35 USC 282.

In Graham v. Deere, 383 US1 86,

S.Ct. 684, this Court set up the guidelines for fact findings required to analyse the obviousness vs. non-obviousness issue of 35 USC 103.

This Court did not set forth any guidelines to implement the presumption of validity where the Patent Office considered the best prior art as in the present case.

The presumption was, originally, the creation of the Courts and was a part of the judge-made body of patent law when the Patent Act of 1952, Title 35, was written. That act, for the first time, made it statutory in §282, first paragraph, which, before the amendments of 1965 and 1975, was the utmost simplicity. It read:

> "A patent shall be presumed valid. The burden of establishing invalidity of a patent shall rest on the party asserting it."

The reviser's note to that section simply

said:

> "The first paragraph declares the existing presumption of validity of patents"

This was a modification of sorts, replacing the conflicting case law with one simple statutory declaration. In his Commentary on the New Patent Act by P. J. Federico, principal author of the act, published in 35 USCA, page 54, the author expands somewhat on the reviser's note, saying:

> "The first paragraph of section 282 declares that a patent shall be presumed valid and that the burden of establishing invalidity of a patent shall rest on a party asserting it. That a patent is presumed valid was the law prior to the new statute, but it was not expressed in the old statute. The statement of the presumption in the statute should give it greater dignity and effectiveness."

In 1952 the case law was far from consistent -- even contradictory -- about the presumption and, absent statutory restraint, judges were free to express

their individual views about it. The foundation for the presumption of course was the basic proposition that a government agency such as the Patent Office was presumed to do its job. Morgan v. Daniels, 153 U.S. 120, 125 (1894). On the burden of persuasion in the face of such a presumption, long before enactment of the present statute, the Supreme Court reviewed the situation in Radio Corp. v. Radio Laboratories, 293 U.S. 1 (1934), noting (p. 7) that the force of the presumption "has found varying expression in this and other courts." Justice Cardozo, after reviewing a variety of expressions of the standard of proof required to overcome the presumption of validity and while noting that "Gradations of difference so subtle are not susceptible of pursuit without leading us into a land of shadows," concluded (p. 8):

> "Through all the verbal variances, however, there runs this common core of thought and truth, that one otherwise an infringer who assails the validity of a patent fair upon its face bears a heavy burden of persuasion, and fails unless his evidence has more than a dubious preponderance."

When no prior art other than that which was considered by the Patent Office Examiner is relied on by the attacker of validity, the attacker should have the added burden of overcoming the deference that is due to a qualified government agency presumed to have properly done its job. This deference is required because the Examiners have expertise in interpreting the references, are specially trained in the technical area in the art involved, and familiar with the level of skill in the art. Moreover, it is their duty to issue only valid patents pursuant to 35 USC 131 which provides:

> "The Commissioner shall cause an examination to be made of the application and the alleged new invention; and if on such examination it appears that the applicant is entitled to a patent under the law, the Commission shall issue a patent therefor."

In the manual of Patent Examining Procedure, Sec. 706, the Examiners are admonished:

> "Patent examiners carry the responsibility of making sure that the standard of patentability enunciated by the Supreme Court and by the Congress is applied in each and every case."

The manual then quotes from this Court's decision in Graham v. Deere. Hence, where the prior art is the same, the same law and facts considered by the Court are considered by the Examiners in the Patent Office.

The 1952 Act and the new statute 35 USC 282 did nothing to eliminate the confusion as to the burden of proof and quantum of evidence necessary to overturn the Patent Office decision and the

proper technique to apply presumption of validity. Where the best prior art was cited and considered by the Patent Office, the various Circuits consider the presumption strengthened. Professor Chisum, in his treatise on Patents, page 5-272, Sec. 5.06 (2) cites and footnotes the following cases for a "strengthened presumption" in footnote 9:

> "Milgo Elec. Corp. v. United Business Communications, Inc., 623 F.2d 645, 206 U.S.P.Q. 281 (10th Cir. 1980); Hanson v. Alpine Valley Ski Area, Inc., 611 F.2d 156, 159, 204 U.S.P.Q. 803 (6th Cir. 1979); Universal Athletic Sales Co. v. American Gym, Recreational & Athletic Equip. Corp., 546 F.2d 530, 540 n. 28, 192 U.S.P.Q. 193 (3d Cir. 1976); CMI Corp. v. Metropolitan Enterprises, Inc., 534 F.2d 874, 880, 189 U.S.P.Q. 770 (10th Cir. 1976); Ortho Pharmaceutical Corp. v. American Hosp. Supply Corp, 534 F.2d 89, 190 U.S.P.Q. 397 (7th Cir. 1976) ('the usual presumption of validity under 35 U.S.C. § 282 is strengthened when the Patent Office specifically considered the prior art which is urged to invalidate the by an accused infringer.');

LaSalle Street Press, Inc. v. McCormick & Henderson, INc., 445 F.2d 84, 93, 170 U.S.P.Q. 305 (7th Cir. 1971) ('The presumption of validity is strengthened where the prior art asserted against validity is no better than that considered and rejected by the Patent Office.'); Stamicarbon, N.V. v. Escambia Chem. Corp., 430 F.2d 920, 926, 166 U.S.P.Q. 362 (5th Cir. 1970); Scaramucci v. Dresser Indus., Inc., 427 F.2d 1309, 1313, 165 U.S.P.Q. 759 (10th Cir. 1970); Nasco Inc. v. Vision-Wrap, Inc., 352 F.2d 905, 908, 147 U.S.P.Q. 297 (7th Cir. 1965); Coal Processing Equip., Inc. v. Campbell, 211 U.S.P.Q. 986 (S.D. Ohio 1981) ('In application this doctrine has meant that prior patents that were disclosed to the Patent Office cannot serve as prior art sufficient to support a finding of obviousness.'); Gruendler Crusher & Pulverizer Co. v. Williams Patent Crusher & Pulverizer, 496 F.Supp. 1385, 210 U.S.P.Q. 89 (E.D. Mo. 1980); Bandag, Inc. v. Lewis General Tires, Inc., 207 U.S.P.Q. 745, 755 (W.D.N.Y. 1980); Entec Plastics Engineering Corp. v. Gates Rubber Co., 206 U.S.P.Q. 524 (D. Colo. 1980); Landes Mfg. Co. v. Chromodern Chair Co., 203 U.S.P.Q. 337 (C.D. Cal. 1978); Dennison Mfg. Co. v. Ben Clements & Sons, Inc., 467 F.Supp. 391, 407, 203 U.S.P.Q. 895 (S.D.N.Y. 1979); Remington Arms Co. v. Funasaw Co., 201 U.S.P.Q. 217 (N.D. Ill. 1978); Deere & Co. v. International Harvester Co., 460 F.Supp. 523,

200 U.S.P.Q. 150 (S.D. Ill. 1978) reversed and remanded 618 F.2d 110 (7th Cir. 1980) (without published opinion) on remand 496 F.Supp. 397, 208 U.S.P.Q. 158 (C.D. Ill. 1980) aff'd 658 F.2d 1137, 211 U.S.P.Q. 11 (7th Cir. 1981) ('presumption cannot be overcome by reliance on prior art . . . having no greater pertinency than that which the Examiner rejected in his allowance of the patent,'); Pate Co. v. RPS Corp., 200 U.S.P.Q. 571 (N.D. Ill. 1978) rev'd 685 F.2d 1019 (7th Cir. 1982); Arco Indus. Corp. v. Chemcast Corp., 200 U.S.P.Q. 491 (E. Mich. 1977); Wilden Pump & Eng'r Co. v. Pressed & Welded Prod. Co., 199 U.S.P.Q. 390 (ND. Cal. 1978) aff'd 655 F.2d 984, --U.S.P.Q. -- (9th Cir. 1981); Rohm & Haas Co. v. Owens-Corning Fiberglass Corp., 196 U.S.P.Q. 726 (N.D. Ala. 1977); Teledyne Indus., Inc. v. Windmere Prods., Inc., 433 F.Supp. 710, 195 U.S.P.Q. 354 (S.D. Fla. 1977) ('This fact that the prior art cited was before the Patent Office for consideration strengthens the presumption of validity accorded this second patent.')"

The Court of Appeals for the Federal Circuit has taken the position that the presumption of validity is a procedural device not substantive law. In Stratoflex Inc. v. Aeroquip Corp.,

(Fed. Cir. 1983) 713 F.2d 1530-1534,

the Court stated:

> "The presumption, like all legal presumptions, is a procedural device, not substantive law. It does require the decisionmaker to employ a decisional approach that starts with acceptance of the patent claims as valid and that looks to the challenger for proof of the contrary. Thus the party asserting invalidity not only has the procedural burden of proceeding first and establishing a prima-facie case, but the burden of persuasion on the merits remains with that party until final decision. The party supporting validity has no initial burden to prove validity, having been given a procedural advantage requiring that he come forward only after a prima-facie case of invalidity has been made. With all the evidence in, the trial court must determine whether the party on which the statute imposes the burden of persuasion has carried that burden."

In the instant case the Court stated as noted above that Defendants' burden was a heavy one. Phrases such as a "heavy burden" are of no aid to a Trial Court in approaching the obviousness - non-obviousness issue where the best

prior art was considered by the Patent Office.

It is apparent from the decision of the Court below that the Trial Court after briefly mentioning the presumption of validity proceeded to analyze patentability (Findings 62-65) (A 46-48) and determine de novo whether the Gardner patent met the requirements or characteristics for patentability of synergism and non-obviousness rather than determine where the Patent Office committed error in granting the patent.

In Finding 87 (A 59), the Court concluded after having proceeded through the analysis required under Graham v. Deere, the claims would have been obvious.

This is contrary to 35 USC 282. The statute requires that the court begin by presuming that the invention has characteristics of patentability. To do otherwise is to ignore the statute and

to place on the patentee a non-statutory burden of proving validity and proving that the Patent Office decision was correct.

The absence of any guidelines on applying the presumption of validity has resulted in the Court's struggle with the technical issues and the gross misapprehension as to the character of the Vits wood block test model and the judgment based thereon on "non-prior art". The judgment of invalidity is so devoid of evidentary support as to be an unconstitutional deprivation of property. Thompson v. City of Louisville, (1960) 362 U.S. 199, 80 S.Ct. 624.

Where "fraud on the Patent Office" is alleged, detailed findings are required to sustain the defense and a finding on "materiality" of the representations are required. Plastic Container Corp. v. Continental Plastics

(CA-10, 1979) 606 F.2d 885, 203 USPQ 27, 38.

The jurisprudence regarding the tests for patentability and "fraud on the Patent Office" is more fully developed than that for applying the presumption of validity. A Trial Court is required to make Graham findings as enunciated by this Court in Graham v. Deere on the obviousness - non-obviousness issue or be subject to reversal and remand for such findings. Palmer v. Orthokinetics, Inc. (CA-9, 1980) 611 F.2d 316, 204 USPQ 893. This Court could and should promulgate fact finding requirements which would aid the Trial Courts in applying the presumption, particularly where the Patent Office had the best prior art before it. For example, the Trial Courts, once they make a finding that the prior art before the Court is no more perti-

nent than that before the Patent Office, should be required to make the following findings where appropriate before overturning the Patent Office, pointing out:

(1) where the Patent Examiner went wrong and misinterpreted the prior art,

(2) where the Patent Examiner went wrong in misunderstanding the technology in the patent application,

(3) where the Patent Examiner went wrong in misunderstanding the claims and allowing claims which fail to distinguish from the prior art,

(4) where the Patent Examiner went wrong in allowing claims which do not distinctly point out the invention,

(5) where the Patent Office went wrong in relying on certain facts submitted by applicant to support allowance,

(6) why the errors of the Examiner

were material to allowance of the patent and justify a holding of invalidity.

While the Court of Appeals for the Federal Circuit will create uniformity in the patent law, it is up to this Court to improve administration of the patent laws by the Lower Courts.

In the absence of any guidelines regarding fact finding requirements, patents in highly technical areas could be invalidated by the Courts on the same evidence, which was fully understood by the Patent Examiners. Under these circumstances, Congress has endeavored to carry out the public interest by enacting 35 USC 282. The aim of the patent system of enforcibility of meritorious patents should not be frustrated by the inability of the judiciary to apprehend the scientific principals involved.

CONCLUSION

For the foregoing reasons, the Petition for Writ of Certiorari should be granted and the judgment of the Court of Appeals should be reversed. The administration of our patent laws requires a definitive pronouncement by this Court on the application of the presumption of validity. This is necessary to maintain the confidence of businessmen in the patent system, the main objective of the sponsors of the bill which created the Court of Appeals for the Federal Circuit.

Respectfully submitted,

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Petitioner,

vs.

TEC SYSTEMS, INC., a corporation of Wisconsin, and ROY E. DOWNHAM, JACK ECKELAERT and JOHN W. FROST,

Respondents.

APPENDIX TO PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

VOL. I

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UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

THOMAS A. GARDNER,	)	
	)	
Appellant,	)	
	)	
v.	)	Appeal No.
	)	
TEC SYSTEMS, INC., et al.,	)	83-697
	)	
Appellees.	)	

DECIDED: January 12, 1984

Before MARKEY, Chief Judge, FRIEDMAN, RICH, DAVIS, Circuit Judges, NICHOLS, Senior Circuit Judge,* BALDWIN, KASHIWA, BENNETT, MILLER, SMITH, and NIES, Circuit Judges.

RICH, Circuit Judge.

Thomas A. Gardner appeals from the order and judgment of the United States District Court for the Eastern District of Wisconsin dismissing his complaint for patent infringement against appellees TEC Systems, Inc., et al. (TEC) and

*/ Judge Nichols took senior status as of October 1, 1983.

holding claims 1, 3, 4, and 8[1/] of his U.S. patent No. 3,452,447 issued July 1, 1969 (the '447 patent), invalid for obviousness under 35 USC 103. We affirm.

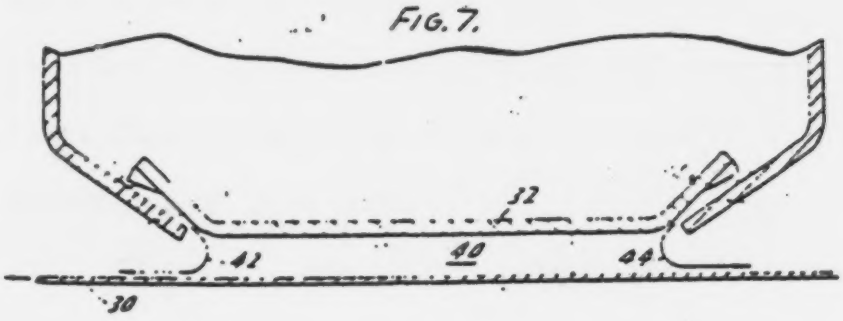
1/ In the final "SUMMARY" section of its opinion, the trial court adjudged that "the patent in suit is invalid as obvious under section 103." Gardner cites this as error because only claims 1, 3, 4, and 8 were in suit. We agree. Reading the entire opinion makes it clear that the only claims which were tried by the parties and considered by the trial court were 1, 3, 4, and 8, and that the trial court simply misstated itself in the above-quoted statement. Accordingly, we regard the decision of the trial court as being limited, as it must be, to the claims in suit, and vacate the order of the trial court to the extent it purports to hold invalid any additional claims. See Felburn v. New York Central R.R. Co., 350 F.2d 416, 420, 146 USPQ 622, 626 (6th Cir. 1965).

BACKGROUND

The Claimed Invention

The '447 patent describes and claims a device which is especially useful in drying the ink used on the high-gloss papers of which many periodicals are made. In the initial stages of the printing process, the paper is in the form of a continuous sheet called the "web." Upon leaving the printing press, the web bears ink which is still wet. Manipulation of the web thus must be accomplished without touching the web and smearing the wet ink. The device disclosed in the '447 patent supports and positions the web by floating it on one zone or between two opposed zones of static air under superatmospheric pressure. One embodiment of the invention is shown in Fig. 7 of the '447 patent, which is a fragmentary detail view in cross section, re-

produced below (here and elsewhere extraneous numbers have been omitted for clarity):



With reference to the figure, web 30 is said to be positioned by the static superatmospheric pressure in zone 40. This zone is confined on the top by suppression plate 32, on the bottom by web 30, and on the sides by partially opposed jets 42 and 44. The structure shown in the figure would normally be duplicated in an inverted position below web 30. Web 30 is shown as moving from right to left. The structure shown in the figure is re-

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ferred to by the parties as an "air bar." Gardner asserts that it prevents "fluttering" of the edges of the web, a problem which is said to have existed in prior art devices and to have caused marking of the web and smearing of the ink.

Claim 1, the only independent claim on appeal, in outline form reads as follows:

1. Means for positioning a moving web by subjecting a transverse zone spanning the web to uniform static pressure, said positioning means comprising

a suppression plate extending transversely across said web and spaced therefrom as closely as is mechanically practicable,

nozzle means no closer to the web than said plate and having slots which extend substantially continuously across said web and are spaced at opposite

sides of said plate,

the minimum spacing
between the web
and said plate
being a distance at least
approximately
twice as great as the
nozzle slot width,

the maximum spacing
of the plate from the
web
never being greater than the
width of the plate

the product
of the width of the plate
and the spacing of the
plate from the web
being less than twenty times
the nozzle
slot width,

and means
for discharging gas under
pressure through
the nozzle slots
for defining a zone of
static pressure
between the plate and
the web.

As will be developed below, the so-called dimensional limitations appearing in this claim have taken on paramount significance. These limitations are expressed in terms of the distance

between the suppression plate and the web (labelled "Y" in the specification), the nozzle slot width (also the orifice width, labelled "D" in the specification), and the width of the suppression plate, which corresponds to the distance between the jets (labelled "L" in the specification). Recasting the claim limitations using these labels, they are:

(1) that Y be as small "as is mechanically practicable";

(2) that Y be greater than or equal to 2D;

(3) that Y never be greater than L; and

(4) that the product LY be less than 20D.

The fourth limitation finds its basis in the specification in a discussion in which D is assigned a value of .030 inch and L a value of 2 inches. It is then stated that good results are achieved when Y is 3/16 inch (.1875

inch), but that performance falls off when Y exceeds .030 (sic, .3) inch. Inserting the values in (4), LY_{max} = .6 in^2 and 20D = .6 in. It is apparently from this observation that Gardner derived his requirement that LY be less than 20D.

The Prior Art and Prosecution History

The prior art patent deemed most important by the trial court in U.S. patent No. 3,181,250 to Vits (the Vits patent or Vits) entitled "Apparatus and Method of Drying Web Material by Directing Hollow Gas Jet Streams Against Opposite Faces of the Web." The general idea can be gleaned from the embodiment of the Vits dryer or air bar shown in his patent in Fig. 10, reproduced below:

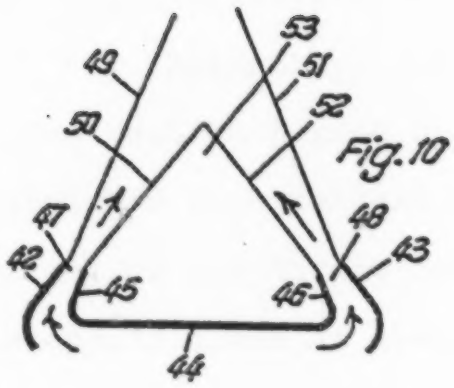


Fig. 10

In the figure, the solid lines show contours of Vits' postulated air flow. Arrows have been added to show the direction of air flow. The Vits dryer has a deflector 44 which extends the width of the web (web not shown). Bent-up edges 45 and 46 of deflector 44, together with nozzle head side walls 42 and 43, form slot nozzles 47 and 48. The air flowing from these nozzles forms, in the language of the Vits specification, "a flow-free prismatic space 53 in which a static excess pressure is built up * * *.

In this manner, a beam-shaped cushion is formed having a triangular cross section * * * Naturally, the crest edge of the cushion formed by the top of the triangle is hypothetical only, but the cushions of the drying medium, e.g., air cushions, flatten at their upper portions so that the web is supported over a relatively wide area." For a description of Vits in greater detail, see In re Stroszynski, 424 F.2d 1114, 1116, 165 USPQ 438, 439 (CCPA 1970).

Vits was a major impediment to the ultimately successful prosecution of the applications which resulted in the '447 patent. As recounted by the trial judge, the initial application was filed on September 23, 1963; all claims corresponding to those involved herein were rejected on Vits. The claims were then amended, and again rejected on Vits. Gardner then filed, after final

rejection, additional amendments and an affidavit presenting data from tests comparing his air bar with an air bar based on Fig. 10 of Vits, but differing from that shown in Fig. 10 in that it had narrower nozzles than shown therein. The purpose of this variation, as explained in the affidavit, was to make it possible to use comparable amounts of air in both devices. Gardner was attempting to show through the affidavit and the tests described therein that Vits depended on impingement or dynamic pressure, and did not teach or suggest the use of a zone of static pressure upon which Gardner's air bar depended. The examiner entered the affidavit, but nevertheless adhered to his rejection. Gardner then filed his first continuation application, the claims of which were also ultimately finally rejected on Vits. Gardner then filed another

amendment after final rejection, which the examiner refused to enter. The significance of this amendment and the refusal to enter it will be seen in connection with the next reference to be discussed. Gardner then filed a third continuation application, and amended the claims to their present form essentially by adding the dimensional limitations. The examiner again rejected the claims, but, after argument on behalf of Gardner, relented. The '447 patent issued July 1, 1969, after nearly six years of prosecution, the focus of which had been the patentability of the invention claimed therein over that disclosed by Vits.

Another prior art patent which the trial judge described as important is U.S. patent No. 3,097,971 to Carlisle et al. (the Carlisle patent, or Carlisle). Entitled "Method of and

Apparatus for Supporting or Guiding Strip Material," it is concerned primarily with supporting materials such as steel strips, but expressly extends application of the principles taught therein to "wide elongate material of various kinds." Fig. 6 of Carlisle

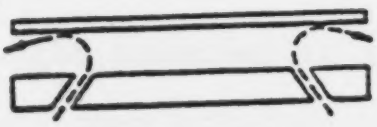


FIG. 6.

shows diagrammatically the use of angled orifices which "enhances the cushion effect of the fluid.". In short, Carlisle shows, as does Vits, the use of partially opposed jets to support a continuous sheet of material.

Carlisle was not cited by the examiner during prosecution of Gardner's initial application and two continuation applications. Gardner re-

quested the examiner to make Carlisle of record in the remarks section of his amendment after final rejection in the first continuation application. It will be recalled, however, that the examiner in his discretion refused to enter that amendment. Thus, at trial, the parties contested whether Carlisle had been considered by the examiner at all, the significance they attached to this fact being, in the words of the trial court, whether the "patent in suit is not entitled to a presumption of validity as to Carlisle."

This last-quoted passage is expecially significant in that it contains the trial court's only mention of the presumption of validity. Despite its awareness of controversy concerning the presumption, the trial court never concluded: (1) whether Carlisle had in fact been considered by the examiner;

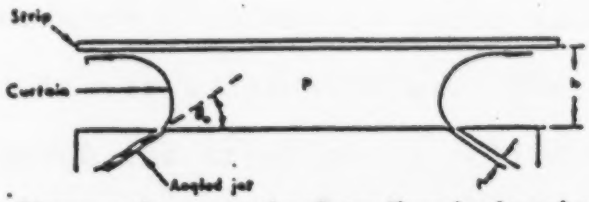
(2) whether Carlisle shows anything not shown in Vits, which was exhaustively considered by the examiner; (3) who had the burden of proving facts concerning validity or invalidity at trial; and (4) by what standard of proof those facts had to be shown.

The final prior art references deemed important by the trial court on the question of nonobviousness are two articles, both British. The first is unattributed and entitled "The Hover Pulley." It appeared in the January 1962 issue of Metallurgia. A "hover pulley" is described therein as means for supporting light gauge strip by use of a fluid cushion between the strip and guide surface, the fluid being introduced therebetween through a series of annular jets. The second article is entitled "The Support of Thin Steel Strip on Air Cushions." It was written

by Jaffrey and Boxall, and was apparently first published in May 1963. As stated therein,

> The principle employed in the Hovercraft* * * is that a pressure rise occurs within the area enclosed by annular (slot) jets, if these jets are in close proximity to a surface (Fig. 3). Air issuing from the slot jets forms, in effect, a curtain which contains a cushion of air at a pressure greater than atmospheric. In our application of the principle, moving steel strip is supported on this cushion.

The Fig. 3 referred to in the above passage follows:



3 *Diagrammatic representation of a two-dimensional annular jet*

While there is no dispute that neither of the two British articles was considered by the examiner, there is a dispute in this appeal over whether the Jaffrey and Boxall article is available

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as prior art. As Gardner points out, apparently for the first time on appeal, the article is not available under 35 USC 102(b) because its May 1963 publication date is not a full year before the September 1963 priority date of the '447 patent. TEC counters that it is available under §102(a) (as prior to Gardner's invention), to which Gardner responds that the trial court found that he had sold one of his air bars in April 1963, so that Jaffrey and Boxall is no more a reference under §102(a) than it was under §102(b). The extent to which the trial court relied upon the Jaffrey and Boxall article in reaching its determination is unclear.

The four references just discussed--Vits, Carlisle, and the two British articles -- are the only ones the trial court categorized as "important." There were two additional references --

U.S. patent No. 3,041,739 to Meier-Windhorst and reissue patent No. 24,144 to Dungler -- which it considered to be of "considerably lesser value." Neither patent seems to have had any detectable bearing on either the trial court's analysis or the arguments of the parties in this appeal. We will therefore not refer to them again.

The Trial Court

Briefly, the trial court recounted the '447 prosecution history, and opined that Gardner's variation of the nozzle width of his reconstruction of Vits used in tests comparing it with his own air bar rendered those tests "of little probative value." The trial court then essentially correctly laid out the tripartite test of nonobviousness as set forth by the Supreme Court in its application of 35 USC 103 in Graham v. John Deere, 383 U.S. 1 (1966). After turn-

ing to a description of the claimed subject matter, however, the trial court unfortunately and unnecessarily lapsed into enunciating what it apparently perceived to be an additional requirement for patentability:

> Thus, the claims represent a combination of old elements. To be patentable such a combination must produce a synergistic result, that is, produce a result greater than the sum of the parts. Andersons-Black Rock v. Pavement [sic; Pavement Salvage] Co., 396 US. 57 (1969).

Having lapsed, however, the trial court then returned to the proper course and undertook a complete tripartite analysis of obviousness. As to the level of skill in the art, the trial court found it to be that of a graduate engineer "with a number of years of experience visualizing, designing, fabricating and testing web handling and treating equipment."

As to the scope and content of

the prior art, the trial court found that Vits was by far the most important reference, concluding:

> Thus it clearly appears that in 1961, Hilmar Vits was not only teaching the use of a cushion of excess static pressure to float a dry air cushion, but was also teaching that the zone of excess static pressure was occupied by a medium "entirely at rest." To the Court this sounds like exactly the concept that Gardner argued so vigorously to the examiner * * * that the zone [in his invention] was one in which there was "no flow of air through or into or parallelling the zone of status [sic] pressure."

The trial court then read claim 1 of the '447 patent on the Vits dryer, finding in Vits every element recited in claim 1 except for the dimensional limitations, which the court viewed as "artificial dimensional limitations that add nothing to the claims, that are of no constructive significance, and are essentially meaningless." The trial court then went on to find that the additional limitations of dependent

claims 3, 4, and 8 were all met by Vits and summed up by saying that the only actual difference between the claimed invention and Vits' dryer was that Vits' baffle plate 44 was not as close to the web as were the nozzles. The court said, however, that experiments conducted by TEC's expert, Dr. Daane, "demonstrated clearly that a Vits embodiment developed both static and kinetic energy, that there was no difference in the type of static pressure under the Vits or the Gardner teachings, and that the Vits device worked entirely satisfactorily in 'floating' a web."

After a brief and inconclusory discussion of the remaining references, the court concluded (finding numbers omitted):

> Having proceeded through the analysis required under Graham v. John Deere Co., supra, the Court expressly finds that the subject matter of the patent claims in issue would have been obvious to a person skilled in the art at the time the alleged invention was made.
>
> The Court further finds that the combination of old elements does not produce a synergistic result, i.e., a greater result than the sum of the parts.
>
> Nor can the Court find any secondary factors such as long felt, unsolved needs, failure of others in the field, or commercial success to influence the determination of obviousness.

The court then denied TEC's request for attorney fees on the ground that this case is not extraordinary within the meaning of 35 USC 285.

After trial, Gardner moved for additional discovery, a new trial, and for an order under Fed. R. Civ. P. 59(e) to alter or amend the judgment by adopting additional findings and conclusions regarding infringement, an issue the trial court had not reached due to its

determination on validity. These motions were denied.

Gardner's Arguments on Appeal

Gardner contends that the trial court erred, inter alia, in[2/]:

1) ignoring the statutory presumption of validity;

2) using the Jaffrey and Boxall article as prior art;

3) applying a test for obviousness

2/ Gardner also alleges error in the trial court's disposition of matters pertaining to his assertion that the individual appellees here, who were defendants below, should have been found personally liable because TEC was merely their corporate alter ego. The trial court refused to credit this assertion, and so dismissed the suit as to them. The additional discovery Gardner sought was to help him to substantiate this claim. Gardner also moved to substitute W. R. Grace & Co. as a defendant as TEC's successor in interest. The trial court denied this motion as well. Due to our disposition on validity, we have no occasion to pass on these matters.

"intertwined with elements of the requirements for synergism," or in holding synergism to be a requirement for patentability; and

4) refusing to credit Gardner's evidence of commercial success.

OPINION

A conclusion on obviousness is one of law and subject to full and independent review on this court. Sarkisian v. Winn-Proof Corp., 688 F.2d 647, 651 (9th Cir. 1982). Our task is thus to consider the facts, either as properly found by the factfinder below or as stipulated to or otherwise uncontested by the parties, and reach our own conclusion on obviousness. We then either affirm the trial court if we agree with its conclusion, reverse if we do not, or vacate and remand for new or additional findings, if, in our view, the record lacks facts essential to formu-

lating a conclusion. Affirmance does not require that we and the trial court reach the conclusion in precisely the same fashion. If, on the essential facts, arrived at through proper application of the relevant law, we agree with the trail court's conclusion, any error concerning nonessential facts ascribed to the trial court in reaching that conclusion is harmless and not a basis for reversal. See 28 USC 2111.

35 USC 103, as applied by the Supreme Court in Graham v. John Deere, makes the factual inquiry into the scope and content of the prior art the appropriate starting point for consideration of obviousness. Thus, we start with the trial court's essentially unchallenged finding that Vits is unquestionably the most pertinent prior art. After painstaking review of the opinion of the trial court and the briefs on appeal,

we have found neither a finding nor a contention which suggests that any of the remaining references teach anything not found in Vits. We therefore premise our reasoning, as did the trial court in essence, on Vits. Doing so obviates the need to consider Gardner's argument that the Jaffrey and Boxall article is not prior art, and whether Carlisle had been considered by the examiner.

We focus next on the differences between the claimed invention and the prior art. Again, we see no clear error in the trial court's finding that Vits discloses the invention of the claims in suit except for their dimensional limitations. TEC argues that these dimensional limitations are likewise met by Vits as well as by devices disclosed in other references, but points to no findings or evidence of record beyond the drawings in the refer-

ences for support. The truth of the proposition is not self-evident. TEC's contentions in this regard are no more than unsupported argument of counsel, and for that reason unpersuasive. Differences between the prior art and the claimed invention therefore remain in the dimensional limitations recited in claim 1.

Finally, we expand our focus and ask the ultimate legal question whether these differences are such that the claimed invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made. Recasting the question in terms of the specific facts of this case, we must decide whether an air bar which has dimensional proportions falling within the ranges recited in claim 1 would have been obvious. By virtue of the statutory presumption of

validity, 35 USC 282, it was up to TEC, the party asserting invalidity, to prove facts which would permit the trial court to answer this question in the affirmative.

It appears from the trial court's opinion, which is cast in the form of a short introduction and 102 "Findings of Fact" (which include some conclusions of law), that TEC tried to meet this burden by proving that the dimensional limitations do not aid in defining nonobvious subject matter because an air bar having relative dimensions falling within the specified proportional ranges performed no differently than an air bar constructed according to the teachings of Vits so that recitation of those limitations does not serve to distinguish over the prior art in any significant way. Whether meeting the dimensional limitations of claim 1 has no effect on

air bar performance is, of course, a fact which TEC had the burden of proving. As for the standard of proof TEC had to meet to prove it, we note that the claims were allowed over Vits, and that no reference shows more than does Vits. It is thus perfectly clear that TEC in effect asked the trial court to cover precisely the same ground as that covered by the PTO in its quasi-judicial determination of patentability that it is authorized and required by statute to render. Therefore, TEC's burden on this point was a heavy one.

Bearing the foregoing in mind, we arrive at the nub of this case. If we are to agree with the trial court, we must have from it a finding supported by the record that TEC proved by clear and convincing evidence that a Gardner air bar coming with the claims of the '447 patent is not in any significant

respect different from similar devices available in the prior art because structural differences over the prior art do not necessarily result in differences in performance over the prior art. Since there is no express finding to this effect, we scrutinize the court's opinion to see whether we can infer such a finding from all that is said therein.

It is useful at this point to recapitulate in greater detail precisely what the trial court said about the dimensional limitations. As to the requirement that the suppression plate be as close to the web "as mechanically practicable," the trial court viewed it as a "limitation without a function." As to the remaining dimensional limitations, it said:

> The Court further concludes that the balance of the elements of plaintiff's Claim 1 represent limitations that do not really differentiate Gardner '447 from the Vits * * * teachings and do not affect the utilization of the principles of fluid dynamics taught by Vits. [T]he Court views [these limitations] as artificial dimensional limitations that add nothing to the claims, that are of no constructive significance, and are essentially meaningless. The evidence at trial never showed that departing from these formulae would necessarily cause an air bar to function or fail. In other words, these claims [sic, claim limitations] are irrelevant.

Later in its opinion, the trial court repeated its position:

> All of the prior art air bars, despite different nozzle sizes, plenum pressures, nozzle directions, or other variations do, in the Court's view, depend upon the creation of a zone of superatmospheric pressure to support the web. Whether that support is weak or strong, uniform or variable, progressive or not, as well as the proportions of static pressure and kinetic pressure are matters which vary as these factors are manipulated. But they do not exhibit qualitatively different phenomena, all used static pressure to some degree; all have suppression plates or structures equivalent thereto; all have nozzle slots extending transversely of the web,

and spaced on opposite sides of the suppression plate or similar structure. The dimensional limitations of Gardner's '447 are essentially meaningless.

Finally, in another opinion rendered a few months later disposing of several Gardner post-trial motions, the court made the following additional remarks:

> Having considered carefully all of the trial testimony and the numerous demonstrations and exhibits, the Court previously concluded that these requirements were empty formulae that had no relationship to any of the principles of fluid mechanics or phenomena thereof which were demonstrated in the trial. To this Court, they were incantations that may have superficially made the application sound like something unique and inventive but had no real function. So far as this poor observer could conclude, adherence to these dimensional mandates did not produce any discernible result or any synergistic [sic] effect. Nor did departure therefrom cause a failure of the web support. Surely, the patent law does not attach uniqueness to dimensional claims that have no significance in the operation of the claimed invention.

These extracts, and the opinion as a

whole, lead us to conclude that the trial court was completely convinced that the dimensional limitations of claim 1 are no more than "window dressing," to use our own term. This conclusion is not based solely on the trial court's occasional and arguable fortuitous use of the word "clearly," although that is a valid consideration. Rather, it is based on everything the trial court said, and the emphatic and unambiguous manner in which it chose to say it. Although it never said so in precise terms, the trial court was unquestionably of the firm conviction that the proofs adduced at trial showed clearly and convincingly that the dimensional limitations of claim 1 failed to particularly point out a feature of an air bar which performed any differently from prior art bars, in other words, that those limitations are a verbal difference only.

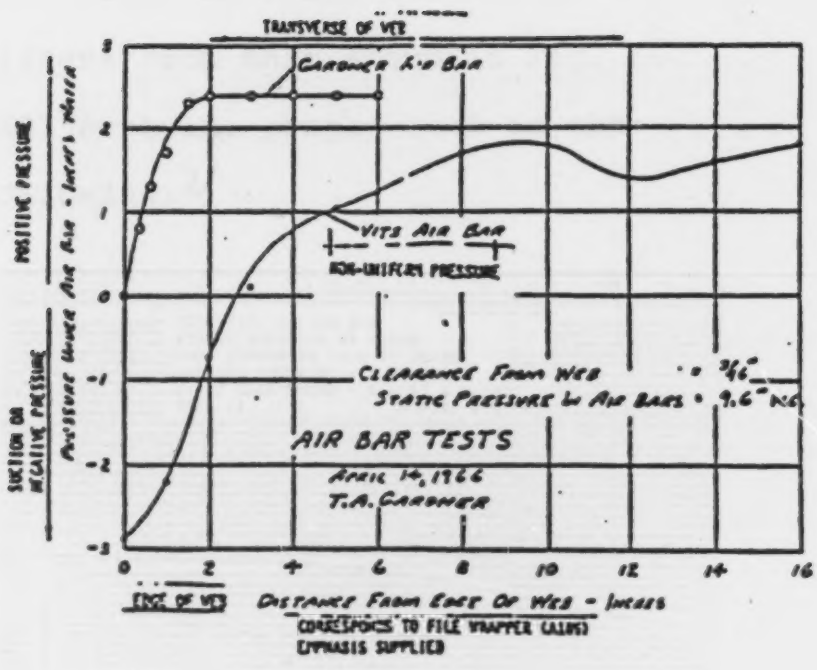
We thus proceed on the basis that the trial court, in essence, made an explicit finding to that effect.

We next determine our standard of review of this inferred finding. Inasmuch as this finding is factual in nature, it would normally be reviewed under the "clearly erroneous" rule. Fed. R. Civ. P. 52(a). Gardner argues, however, that the factual determinations in this case come within an exception to the clearly erroneous rule recognized in some courts when the trial court makes determinations solely on documentary evidence. Even if we recognize such an exception, it does not apply in this case. The opinion of the trial court, as well as the arguments of Gardner himself, make clear that resolution of this case turned at least partially on testimony given and exhibits displayed at trial. Accordingly, we apply the clearly

erroneous standard. Was the trial court clearly erroneous in its conviction that the proofs adduced at trial showed clearly and convincingly that the dimensional limitations of claim 1 made no significant difference in the operation of an air bar?

The salient evidence introduced at trial consists of the following:

1. The tests described in Gardner's affidavit submitted to the PTO during prosecution of the applications leading to the '447 patent. As may be recalled, these tests used a version of the dryer shown in Fig. 10 of Vits except that the nozzle width was different. The tests produced the following graph, showing the pressure profile of a Gardner air bar versus that of the Gardner version of the Vits dryer, as reproduced in Gardner's brief:



This graph shows quite clearly that at least the Gardner version of the Vits dryer produced negative pressure or suction (below zero line) at the edge of the web, whereas the curve associated with Gardner's air bar shows positive pressure to the web's edge.

2. Tests described by Gardner in his testimony at trial, and also in Plaintiff's Exhibit (PX) 31. These

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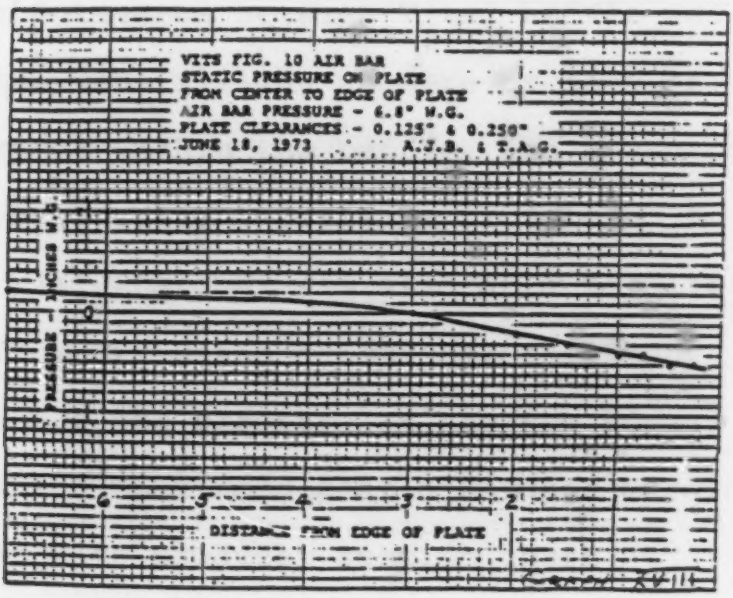
tests also used a Gardner version of a Vits dryer in which the nozzle width differs from that shown in Fig. 10. PX31 contains graphs such as the following:[3/]



which confirm the findings set forth in the PTO affidavit that at least the Gardner embodiment of Vits which was used produced suction at the web edges.

3/ This figure is a condensation of the exhibit, omitting one of two graphs.

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3. The so-called "wooden block" tests conducted by TEC's expert, Dr. Daane. In these tests, Dr. Daane also used a Gardner version of Vits. He then inserted wooden blocks of various thicknesses between Vits' baffle and the web, filling up more or less of the space within the baffle, and measured the resultant pressure profiles. At trial, Gardner was also able to elicit from Dr. Daane additional testimony about the pressure at the web edges, which confirmed that a Gardner version of Vits produces suction there.

What little the trial court said about the evidentiary bases for its holdings has for the most part already been mentioned above. The trial court opined that the tests reported to the PTO were "of little probative value" because of Gardner's deviation from the nozzle width depicted in Fig. 10. The

trial court said nothing about Gardner's PX31 tests and testimony, except for a catch-all statement that "The evidence at trial never showed that departing from [the dimensional limitations] would necessarily cause an air bar to function or fail." Finally, the trial court seemed to set great store by the evidence provided by Dr. Daane. As stated in its opinion (at finding 51):

> Dr. Daane conducted a series of experiments with a scaled model of a Vits bar (figure 10) using wooden inserts to vary the distance from the baffle plate to the surface of the web. These experiments, repeated during the trial, demonstrated clearly that a Vits embodiment developed both static and kinetic energy, that there was no difference in the type of static pressure under the Vits or the Gardner teachings, and that the Vits device worked entirely satisfactorily in "floating" a web. The pressure profiles differed somewhat depending on such factors as the pressure in the plenum (Sp.); the angle of [sic; at] which the jets struck the web; the size of the orifice and the relative closeness or remoteness of the web to the suppression plate or baffle plate.

However, the differences were in quantity, not kind, and might or might not be beneficial depending upon how important problems such as weight, strength, dryness, edge flutters, and support of the web were to one.

The trial court made additional relevant comments in the opinion on the denial of Gardner's post-trial motions:

> Tests done during trial of the bar embodying Gardner '447 claims and a bar embodying Vits claims convinced the Court that their performance was essentially the same -- and that they functioned under the same principles. This was particularly true when the tests utilizing a web and movable pressure gauge were performed by defendant with configurations, nozzle slots, and air pressures that made the tests probative. The wooden insert proved that for proper support, the nozzle slots did not have to be no closer to the web than the suppression plate; that the minimum spacing between the web and the plate did not have to be at least twice as great as the nozzle slot width; and that the product of the width of the plate and the spacing of the plate from the web did not have to necessarily be less than twenty times the nozzle slot width.

As to the Gardner claim that the

> maximum spacing of the plate from the web could never be greater than the width of the plate, to be sure the Court observed that there was a limit beyond which the plate could not be separated from the web. Otherwise the phenomena which cause air bars to function became inoperable. But there was no magic to the various dimensional limitations which the applicant included in Claim 1 and, therefore, they provided no help to the Court in ruling on non-obviousness.

Gardner attacks the trial court's denigration of his affidavit tests by pointing out that Vits does not specify any width for his nozzles, and that the trial court could not properly rely upon the scale of Vits' Fig. 10 to infer the proper dimensions. The fact is that Gardner changed the Fig. 10 nozzle dimensions in building his version of Vits' bar and it was for the trial court to evaluate the probative weight to assign to the tests which were made with it. We cannot find reversible error in the trial court's evaluation of that test evidence on a fact issue.

Having surveyed all of the above-mentioned evidence, a well as other evidence cited to us by the parties, we are not "left with the definite and firm conviction that a mistake has been committed." United States v. United States Gypsum Co., 333 U.S. 364, 395 (1948). It is indisputable from the record that a Gardner version of a Vits dryer produces some suction at the edge. It is equally indisputable, however, that pressure profiles are a complex function of nozzle size, nozzle direction, and plenum pressure, to name the few variables referred to by the trial court. Claim 1, however, is not limited to any of these variables. Thus, no unique pressure profile arises from the combination specified therein, and any advantage alleged to derive from the existence of such a pressure profile is eliminated from consideration. The

trial court would not have been clearly erroneous in concluding that the dimensional limitations did not specify a device which performed and operated any differently from the prior art. Its decision therefore stands.

We note further that Gardner also alleges reversible error in the trial court's failure to find that Gardner's air bar had been a commercial success. Suffice it to say that this issue was hotly disputed at trial, with conflicting evidence on amounts of sales and whether those sales were due to the inclusion of the claimed features of the invention. TEC even goes so far as to say that Gardner's air bars were such a spectacular failure that they poisoned the reputation of floater dryers. The trial court resolved these issues of credibility by finding, in effect, neither commercial success nor failure. Gardner

has failed to convince us of any clear error in its so doing.

Finally, to address Gardner's contentions regarding synergism, this court has sought to make it clear that an absence of "synergism" or "synergistic effect" has no place in evaluating other evidence of nonobviousness, for example as in Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1540, 218 USPQ 871, 880 (Fed. Cir. 1983). Here, however, as in Stratoflex, the trial court premised its holding of invalidity on proper grounds of obviousness, with which we agree, and at most alternatively on a lack of synergism. Thus, error in the trial court's reliance on a lack of synergism in this case is harmless. Id.

Gardner has not argued the validity of the remaining claims in suit, claims 3, 4, and 8, apart from the validity of

claim 1, from which they depend. We cannot discern for ourselves any independent basis for their validity. We therefore affirm the holding of invalidity of these claims as well.

CONCLUSION

For the foregoing reasons, the decision of the trial court that U.S. patent No. 3,452,447 is invalid is vacated as to claims 2, 5, 6, and 7 for reasons stated in note 1, supra, and affirmed as to claims 1, 3, 4, and 8.

MODIFIED

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

MEMORANDUM

RE: Appeal No. 83-697
Thomas A. Gardner vs.
TEC Systems, Inc., etc.,
et al.

The Court today announced its decision in the above-entitled appeal.

A copy of the Court's opinion is enclosed, and a judgment in conformity with the opinion has been entered today as required by Rule 36, Federal Rules of Appellate Procedure.

Costs may be recovered (by Appellant or Appellee) as provided by Rule 39, Federal Rules of Appellate Procedure.

Very truly yours,

George E. Hutchinson,
Clerk

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

THOMAS A. GARDNER, Appellant,	)	
v.	)	No. 83-697
TEC SYSTEMS, INC., ETC., Appellee.	)	

O R D E R

A suggestion for rehearing in banc having been filed in this case,

UPON CONSIDERATION THEREOF, it is Ordered by the court that the suggestion for rehearing in banc be, and the same is hereby, Declined.

FOR THE COURT

George E. Hutchinson
Clerk

February 22, 1984
Date

cc: Henry C. Fuller
James E. Nilles

UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF WISCONSIN

THOMAS A. GARDNER,

Plaintiff,

vs. Case No. 69-C-369

TEC SYSTEMS, INC.,
a Wisconsin corporation,
ROY E. DOWNHAM, JACK ECKELAERT
and JOHN W. FROST,

Defendants.

MEMORANDUM AND ORDER

Statement of the Case

Plaintiff filed this action on July 28, 1969, charging the defendants with infringement of two patents and unfair competition. One patent was U.S. Patent No. 3,172,412 for "Multiple Nozzle Air Blast Web Drying" which issued to plaintiff, Thomas A. Gardner, on April 6, 1965. Plaintiff subsequently withdrew this patent from suit and abandoned the charge of unfair competition.

The other patent in suit is U.S. Patent No. 3,452,447 for "Web Positioning Means and Method" which issued on July 1, 1969 to plaintiff. The claims relied upon by plaintiff in this action are Claims 1, 3, 4 and 8.

Plaintiff seeks injunctive relief and an accounting. Defendants deny validity and infringement of the patent in suit. Defendants further allege that the patent is unenforceable because of misconduct by the plaintiff before the Patent Office and the Court. Both parties seek awards of costs, expenses, and attorney's fees pursuant to 35 U.S.C. §285.

During the pendancy of the action, defendant, TEC Systems, Inc. and the individual defendants Downham, Eckelaert, and Frost moved to dismiss pursuant to Rule 41(b). By an order dated February 4, 1977, the Court denied the motion for dismissal as to the corporate de-

fendant TEC Systems, Inc., granted dismissal as to individual defendants Downham, Eckelaert, and Frost and ordered that the determination of whether costs, expenses and attorney's fees should be awarded be held in abeyance until the entry of judgment at the conclusion of the case. In this regard, the findings of fact made at that time are incorporated herein as paragraphs 15, 19, 20, 21, 22, 23, 24, 25, 26 and 27 of this document. Likewise, the conclusions of law made at that time are also incorporated herein.

Trial to the Court was held on January 19 to 23, 26 to 30, February 10 to 12 of 1976 and January 31, February 1, 4, 7, 11 and 14 to 17 of 1977. At the conclusion of trial, the Court requested proposed findings of fact, conclusions of law and post-trial briefs on pertinent issues as well as

a proposed form of judgment. The following constitutes the Court's Findings of Fact and Conclusions of Law pursuant to Rule 52(b) of the Federal Rules of Civil Procedure.

FINDINGS OF FACT

Parties and Background

1. Plaintiff Thomas A. Gardner is an individual citizen of the United States and resides at 513 Clark Street, Neenah, Wisconsin 54956.

2. Defendant TEC Systems, Inc. is a corporation of the State of Wisconsin. At the time of the filing of the complaint, it was located in Menasha, Wisconsin. Subsequently, it moved to DePere, Wisconsin. Its principal place of business is now located at 830 Prosper Road, DePere, Wisconsin 54115.

3. Defendant Roy E. Downham is an individual citizen of the United States.

At the time of filing of the complaint he resided at 457 East Lowell Place, Neenah, Wisconsin. He now resides at Fox Trail, Route 5, Green Bay, Wisconsin 54115.

4. Defendant Jack Eckelaert is an individual citizen of the United States. At the time of filing of the complaint he resided at 1043 Oak Street, Neenah, Wisconsin. He now resides at 706 North Winnebago, DePere, Wisconsin 54115.

5. Defendant John W. Frost is an individual citizen of the United States. At the time of filing of the complaint he resided at 512 East Parkway Boulevard, Appleton, Wisconsin. He now resides at Birch Creek Road, DePere, Wisconsin 54115.

6. Overly, Inc., a corporation of the State of Wisconsin, has its principal place of business at 211 Jackson Street, Neenah, Wisconsin 54956. Overly is not a party to this suit but is licensed

under the patent.

7. Plaintiff Gardner is a graduate mechanical engineer. He was employed by Abitibi Corp., a Canadian paper manufacturer from 1949 to 1953, and by Marathon Corp. (later American Can Company) until early 1963. His experience covered a broad field in the paper and related industries. During the latter portion of his time with Marathon he became a staff specialist in web drying and coating.

8. In 1954, while doing project work for Marathon, Gardner became acquainted with William Overly of Overly's, Inc. At that time, Overly's was a metal fabrication firm with 15 to 25 employees that manufactured drying equipment to serve primarily the paper industry. Gardner and Overly worked together on various projects and they discussed problems in the realm of air

drying.

9. Beginning in 1955 an arrangement developed between Gardner and Overly whereby with the approval of Marathon, Overly supported the development of some of Gardner's ideas, made prototypes in their shop and in return, were to receive a license for any successful device. The first device that was actually patented was an invention for Multiple Nozzle Air Blast Web Drying (U.S. Patent No. 3,176,412 PX 58).

10. The background of the events which occurred next requires an understanding of the art of process printing. Process printing involves the use of high gloss heat set inks on relatively non-ink absorbing high gloss coated paper. This type of printed matter is exemplified by the type of paper used in slick paper magazines such as Life, Time, National Geographic, etc. This

type of printing differs greatly from other types of printing, such as newspaper printing, in which an absorptive paper is used and the ink is absorbed in the paper and hence does not require drying of the ink. Process printing also differs from rotogravure printing in which highly volatile solvents are present in the ink. These evaporate very quickly so that the printed web does not require much drying. However, the heat set inks needed for the high gloss type of printing used in the process printing industry have ingredients including oil solvents with high boiling points, frequently in the neighborhood of 450°-600°F. Such inks are necessary for process printing because they will not dry out and cake up on the press. Accordingly, webs printed with such inks can be run at the high speeds on the offset and letter

presses typically used in the process printing industry. But, at the same time, inks with oil solvents having such high boiling points are very difficult to dry and require high temperatures to boil or evaporate off the solvents from the inks.

11. During the period we are concerned with here, the process printing industry had moved extensively into high gloss papers with heat set inks and utilized presses with ever-increasing speeds. But the oil solvents were impossible to dry at the temperatures previously used and drying techniques were concentrated on what were called flame and flame-air dryers. Various flame dryers are illustrated in PX 38.

But flames and flame-air dryers had a number of drawbacks. First, there is an adverse effect upon the paper of the web. The paper web inherently con-

tains a certain amount of moisture and when subjected to the temperatures of some of the dryers reaching as high as 1500°-2000"F., some of the moisture from the web itself is evaporated and the web becomes brittle and disclored. Second, such temperatures tend to soften the resins which are part of the heat-set ink. These softened resins sink into the paper and do not sit on the surface to hold the pigments. This results in a loss of gloss. Third, blistering of the paper web is a problem. The web acquires a bumpy or goose-pimpled effect. Fourth, a major problem is the ever present hazard of fire. Open-flame dryers directly expose the paper to the flames. If the paper moved too slowly or stopped moving, it could easily ignite and cause great danger in printing establishments with ever-present inflammable materials

around. Fifth, utilization of flame and flame-air dryers severely limited the speed and capacity of the presses. On a web printed on both sides, it is not possible to support the web mechanically before the ink is dry because the rollers or supports would smear the ink. Accordingly, the web had to be run slowly enough in the space between the printing roll and the first mechanical support to allow the flame or flame-air dryers to set the ink before the web reached the first mechanical support, but yet fast enough to avoid its catching on fire.

12. In an effort to address these problems, plaintiff in 1960 developed a high velocity air dryer expressed in Gardner 412-PX 58. This was not a floater dryer but a radial or platen-type dryer. It could effectively dry with high speed air a web printed on one side only. The other side of the

web was supported on a drum, or a flat or curved platen. This device, unlike the flame and flame-air dryers, could utilize a much lower temperature of the drying medium. With an air temperature of 500°-600°F., the web paper was not subject to temperatures so high as to blister or remove moisture from the web. Yet, the oils in the ink solvents could be removed very quickly because of the high mass transfer rate between the flowing air and the inked surface. The heat set ink retained its gloss and the resins would sit upon the coated surface and hold the pigments. Furthermore, the fire-hazard of the flame-type dryers was eliminated. Nonetheless, Gardner 412 was not a complete solution. To use this dryer, the web had to be printed on one side, that side dried, and then the web printed on the opposite side and that side dried.

13. Plaintiff's first attempt to use high velocity air drying on a web simultaneously printed on both sides took place at the Miehle Company of Chicago, Illinois, in 1962. This company was developing a new high speed press. Overly, under Gardner's direction, fabricated a new dryer which was sent on consignment to Miehle with the hope it would prove satisfactory. The dryer utilized no drum or platen, but rather consisted of sets of opposed high velocity nozzles with the web to be floated or transported between them, The effort was a failure. The web would not remain properly positioned between the nozzle and would stick to one or the other set of nozzles. Also, the web would drag on the nozzles and wipe the ink off on the nozzles. This would gum-up the nozzles and smear the paper.

14. Concluding that attempting to

support and dry a high-speed web, simply through the use of straightforward or dynamic jets, would not work, Gardner, in early 1963, cast about for a different approach and decided to use a static pressure area to support and stabilize the web. A program was initiated at Overly, Inc. under the cooperative arrangement between Gardner and Overly, and for a concentrated period of about twenty days in 1963, variations were fabricated each day and tested each night with a device that Gardner called a "Web Stabilizer Air Bar" ultimately being installed with a high-velocity dryer then being built and reconstructed to accommodate the new device (PX 43). The design still had certain problems but, within a month, a new dryer with web stabilizers was installed in a new offset press. Several more dryers of similar design were subsequently in-

stalled. The first sale by plaintiff and public use was at the McCall Corporation Printing Plant in Dayton, Ohio, in the spring of 1963.

15. Plaintiff Gardner authored several technical papers in 1963 and 1964 describing the Gardner air bar and dryers equipped with it. Overly, Inc. published reprints of these technical papers, as well as its own advertising literature and catalogs illustrating and describing the same. These publications include PX 39-46, inclusive.

16. Plaintiff initially filed an application for the patent in suit on September 23, 1963. After a long and tortured prosecution, the patent in suit (U.S. Patent No. 3,452,447, PX 1), entitled Web Positioning Means and Method, was granted on July 1, 1969.

17. Plaintiff Gardner is also the named inventor and owner of the following

foreign patents, the disclosures of which correspond to the patent in suit:

(a) Canadian Patent 745,041 issued October 25, 1966.

(b) British Patent 1,073,591 published June 28, 1967.

(c) French Patent 1,395,604 published March, 1965.

(d) Italian Patent 753,161 published March 1967.

An application was made for a German patent, but this application was rejected on a Carlisle Patent No. 3,097,971 (DX308) by the German Board of Appeals. Gardner did not appeal this determination but abandoned any further efforts to obtain a German patent. Overly, Inc. is not a party to this suit but it is licensed by Gardner under the U.S. patent in suit (U.S. Patent 3,542,447) and the foreign patents listed immediately above (PX 6). Beginning with the first manu-

facturing of Gardner air bars in 1963, Overly operated under a verbal license. Gardner left Overly's in 1967 and took his materials with him; but earnings under the licenses continued for several years. In January 1969, a written license was executed.

18. Pursuant to the license agreement, Gardner received the following royalties on 93 systems sold over an eight-year period:

1964	$30,000
1965	$50,000
1966	$36,000
1967	$62,000
1968	$56,000
1969	$70,000
1970	$10,000

Payments for 1969 and 1970 were made over a period of years. Gardner testified that there were no sales after 1970 because Overly, Inc. was no longer in the

market with high velocity floater dryers, TEC Systems, the defendant, having taken over the market by then.

Liability of Individual Defendants

19. From a time prior to 1963 and until January of 1969, individual defendants, Downham, Eckelaert and Frost were employed by Overly, Inc. in positions of trust and confidence. At the end of this period, Downham was executive vice president of Overly, Eckelaert was director of sales of Overly, and Frost was chief engineer of Overly. The defendants left the employ of Overly, Inc. in order to market a product which they had designed on their own time during 1967 and 1968.

20. Defendant TEC Systems, Inc. was incorporated on January 14, 1969 to manufacture and market the accused device. Each of the individual defendants: Downham, Eckelaert and Frost, owns approximately 26.5 percent of the shares

of stock of TEC, for a total of 79.5 percent thereof. The remainder of the stock of TEC Systems, Inc. is owned by a sma-l group of minority stockholders. At all times during the existence of TEC, defendant Downham has been president and chairman of the Board of Directors. Defendant Eckelaert has at all times been vice president and director. For a brief period after its incorporation, Eckelaert also served as treasurer of TEC. At all times since TEC's formation, defendant Frost has serted as its vice president and director. Shortly after its incorporation, he was elected secretary and treasurer of TEC. Although the individual defendants are officers and directors of TEC Systems, Inc., there is no indication that any one or all of the defendants so dominate the corporation such that it could be construed as a mere instrument of the defendants or their

alter ego or a sham corporation. TEC Systems, Inc. appears to be an ongoing and independent concern. There is no evidence with respect to the activities of the Board of Directors or of the control of the individual defendants other than as set out above.

21. Part of the business of Overly, Inc. from 1963 until 1969 was the manufacture and sale of the Gardner air bar and dryers incorporating said air bar licensed under Gardner patent in suit No. 3,452,447. The individual defendants, Downham, Eckelaert and Frost, were thoroughly familiar with such air bars and dryers and the business operations of Overly, Inc. in the manufacture and sale thereof.

22. Plaintiff Gardner had office space on the premises of Overly, Inc. until early 1967 and conferred frequently with the individual defendants,

Downham, Eckelaert and Frost, with respect to the Gardner air bar and dryers incorporating the Gardner air bar. Said individual defendants were familiar with the fact that patent applications were pending on the Gardner air bar, that Overly, Inc. was licensed thereunder and that Overly, Inc. was obligated to pay royalties thereunder.

Plaintiff Gardner authored several technical papers in 1963 and 1964 describing the Gardner air and dryers equipped therewith and Overly published reprints of these technical papers, as well as its own advertising literature and catalogs illustrating and describing the same. These publications include PX 39-46 inclusive. The individual defendants Downham, Eckelaert and Frost had access to and were familiar with these published documents.

23. During 1967 and 1968, for a

period of approximately two years prior to the termination of their employement with Overly, Inc. in January of 1969, the individual defendants, Downham, Eckelaert and Frost, in their respective capacities for the Overly concern, became aware of increasing complaints from customers regarding performance problems with the Overly air bar and air flotation drying systems. Feeling that Gardner resisted efforts to alter and improve the device to meet the industry's needs, the three men worked together during this period on the development of a different air bar and an air flotation drying system incorporating such air bar. At least one of the individual defendants sought to conduct research and development at Overly, Inc. in order to improve the Gardner air bar but was rebuffed. In late 1968, said defendants made eight (8) such air bars and assembled

them in a plywood and sheet metal mockup of a dryer. This mockup and one of the said air bars is illustrated in defendant TEC's advertising brochure, marked Plaintiff's trial Exhibit 14 (Plaintiff's Deposition Exhibit 1 referred to in the depositions of Downham and Eckelaert of August 28, 1969). This brochure was publicly distributed prior to this suit. Prior to this suit, defendants solicited sales of its accused air bars and dryers incorporating such air bars on the basis of the apparatus shown in the brochure, and a demonstration model thereof which is similar to the demonstration model (PX 47) and the brochure. Defendant TEC received its first order for such a dryer in April of 1969. TEC delivered its first dryer to a customer in September, 1969.

24. On February 27, 1969, individual defendants, Downham, Eckelaert

and Frost, filed United States Patent Application Serial No. 802,923 on the subject matter of their air bar and air flotation system. This application was assigned to defendant TEC and ultimately matured into United States Patent 3,549,070 on December 22, 1970. Subsequently, defendant TEC has obtained United States Patent 3,739,491, granted June 19, 1973; Patent 3,776,440, granted December 4, 1973; Patent 3,873,013, granted March 25, 1975, on the subject matter relating to this suit.

25. Corporate defendant TEC has issued various publications relating to subject matter accused as infringing the patent in suit. These publications include exhibits (PX 13-28).

26. During the two-year period in 1967 and 1968 when the individual defendants were developing an air bar, they maintained a record of their work which

is identified as defendant's loose leaf book, or "black book," (PX 29). This record, while not all inclusive, indicates that the defendants conducted extensive tests and expended a considerable amount of time and effort in the development of the accused device. While the accused device may, in fact, infringe the patent in suit, the evidence indicates that the individual defendants believes that they had developed a "non-infringing" device. Because of its determination of other issues, the Court need not resolve infringement.

27. No accused air bars were delivered to customers by defendants prior to filing of the complaint in this action.

28. The facts as set forth above distinguish this case from those wherein the individual defendants pirate or copy the design of the patent in suit and then actively induce the subsequent manu-

facture and sale of the accused device. The extensive experimental activities of the individual defendants were, in the opinion of this Court, conducted in good faith in order to develop an improved air bar. The Court is persuaded that the defendants believed that the accused device was noninfringing because of the improved features incorporated therein. The commercial success of the accused device is further evidence of the improved design of the TEC air bar. In the final analysis, the plaintiff has failed to establish that the individual defendants merely copied the Gardner patent and then actively induced the subsequent manufacture and sale of an infringing device.

29. The facts also fail to establish that TEC Systems, Inc. is the mere "alter ego" of the individual defendants. While the plaintiff has es-

tablished some of the criteria for such a finding, the Court is not persuaded that the plaintiff has met his burden of proof. As such, this case is not unlike that of Besly-Welles Corp. v. Balax, Inc., 291 F. Supp. 328 (E.D. Wis. 1968), affirmed in part, reversed in part on other grounds, 421 F.2d 809 (7th Cir. 1970), cert. denied, 399 U.S. 911. In that case, the individual defendant had designed the accused device, was president of the corporation, and owned sixty-three percent of the common stock. Judge Gordon found that there was no indication that the corporation was the mere instrument of the defendant even though the defendant had owned all of the stock at one time. He alluded to the fact that the board of directors was apparently active in the management of the business affairs of the corporation. In the instant case, none of the individual de-

fendants owns more than 26.5 percent of the shares of the corporation. While the individuals are officers and directors of the corporation, there is no proof that the corporation is a sham. The evidence indicates that the corporation is an ongoing and independent concern. There is a total absence of proof on the activities of the Board of Directors or even the number and identity of the directors other than the individual defendants. The evidence indicates that there are minority shareholders. In sum, the Court is persuaded that the plaintiff has failed to make the special showing necessary to pierce the corporate veil.

30. The Court is further persuaded that plaintiff's proof fails to establish that the individual defendants as officers of the corporation acted willfully and knowingly with the intent to infringe the patent in suit. While it is conceded

that the defendants sought to compete with the Gardner air bar, the evidence indicates that their activities were conducted in good faith in the belief that they had designed a noninfringing device.

The Patent and Its Prosecution

31. The patent in suit (U.S. Patent 3,452,447 - Ex 1) is entitled "Web Positioning Means and Method." The Abstract of Disclosure indicates:

ABSTRACT OF THE DISCLOSURE

> For positioning a moving web either in space or against a heat exchange surface, a zone of superatmospheric pressure is established by disposing a suppression plate as close to the face of the web as is mechanically practicable and then directing between the web and plate obliquely in opposition to each other elongated jets of gas which are continuous across the web. The resultant reaction pressure develops as the gas is turned back upon itself at the edge of the pressurized zone to flow in opposite direction longitudinally of the web.

Despite its title, the patent claims

only apparatus since all of the plaintiff's method claims were ultimately rejected by the Patent Office. That decision was sustained on appeal to the Patent Office Board of Appeals and also on petition for reconsideration.

This suit involves Claims 1, 3, 4, and 8 of the patent which are the subject matter allegedly infringed. Claims 3, 4, and 8 are dependent on Claim 1 and incorporate all of the elements of Claim 1 into each of them.

32. Claim 1 of the patent, broken into its constituent elements, is:

> Means for positioning a moving web by subjecting a transverse zone spanning the web to uniform static pressure, said positioning means comprising
>
> a suppression plate extending transversely across said web and spaced therefrom as closely as is mechanically practicable,
>
> nozzle means no closer to the web than said plate and having slots which extend substantially continuously across said web and are

spaced at opposite sides of said plate,

the minimum spacing between the web and said plate being a distance at least approximately twice as great as the nozzle slot width,

the maximum spacing of the plate from the web never being greater than the width of the plate, the product of the width of the plate and the spacing of the plate from the web being less than twenty times the nozzle slot width,

and means for discharging gas under pressure through the nozzle slots for defining a zone of static pressure between the plate and the web.

Claim 3 also incorporates all of the subject matter of Claim 1 and adds to them two more requirements as follows:

both the plate and the nozzle slots extend laterally beyond the side margins of the web,

escape of gas laterally of the web holding the web margins laterally tensioned and flat.

Claim 4 likewise incorporates all of the subject matter of Claim 1 and adds two other requirements as follows:

the nozzle slots are so positioned angularly as to direct opposing jets of gas convergingly toward the web and into the space between the web and the plate,

such space providing clearance for change in direction of the gas of said jets to move in opposite directions from a zone of static superatmospheric pressure established by the jets between the plate and the web.

Claim 8 incorporates all of the subject matter of Claim 1 plus the following three requirements:

air bars offset longitudinally of the web,

each bar comprising positioning structure as defined in Claim 1,

the offset of said bars being sufficient to effect deflection of the web in passing the bars successively.

33. Thus, it will be seen that subject matter of Gardner 447 (PX 1) is claimed in Claim 1 as a combination of: (1) a moving web; plus (2) a "suppression plate extending transversely across said web and spaced

therefrom as close as is mechanically practicable"; plus (3) nozzle slots "which extend substantially continuously across said web and are spaced at opposite sides of the plate"; plus (4) "a means for discharging gas under pressure through the nozzle slots"; plus (5) results from the foregoing in terms of "a zone of static pressure"; plus (6) three sets of dimensions which allegedly define both the minimum and maximum distances between the plate and the web and a maximum result for the product of the width of the suppression plate times the space between the web and the suppression plate.

The three sets of dimensions are:

(a) The minimum spacing between the web and the plate is a distance at least approximately twice as great as the nozzle slot width.

(b) The maximum spacing of the

plate from the web is never greater than the width of the plate.

(c) The product of the width of the plate and the spacing of the plate from the web is less than 20 times the nozzle width.

34. The patent in suit teaches:

> . . . directing between the web and plate obliquely in opposition to each other elongated jets of gas which are continuous across the web. The resultant reaction pressure develops as the gas is turned back upon itself at the edge of the pressurized zone the flow in the (sic) opposite direction longitudionally of the web. Gardner 447 Abstract of Disclosure.

Hence, the claims create the cushion to support and carry the web by utilizing opposed directional jets which collide with the underside of the web and each other such that the gas then is forced back upon itself and finds relief only in the flow out laterally through the ends of the bar.

35. The patent application herein

had a long history requiring three successive applications extending over a period of about six years before the patent was ultimately approved. The initial application for the patent in suit was filed on September 23, 1963. The claims were broadly couched and all those claims involved in this suit were rejected based on U.S. Patent No. 3,181,250 (Vits DX 300).

36. Amended claims were submitted on April 18, 1966. Again, the relevant claims were rejected based on Vits, the examiner disagreeing with Gardner that the Vits did not teach static super-atmospheric pressure. This was a final rejection. (DX 300).

37. In an attempt to persuade the examiner to change his mind, on June 6, 1966, the plaintiff filed a new amendment and a lengthy affidavit in which

he submitted the results of tests which he had performed on an embodiment of the Vits bar which he had constructed from Figure 10 of the Vits patent. His affidavit recited that the Vits embodiment was scaled as nearly as possible identical with the showing of Figure 10, except that it was necessary to reduce the width of the nozzle slots so that the amount of air used would be at least reasonably comparable with the amount of air used in the Gardner nozzle. Throughout the affidavit the thesis of the petitioner was that the Vits device depended upon impingement pressure and did not function through the utilization of static pressure. He compared the results which he had obtained from the so-called Vits embodiment and the so-called standard commercial product embodying the Gardner claims and cited the tests as "conclusive evidence that

Vits was not concerned with the static pressure of the type produced by a suppression plate."

38. At the trial, defendants strenuously alleged that the embodiment of Vits used by Gardner in his comparative tests and analysis was in no sense a faithful reproduction of the Vits device or the Vits teachings. Plaintiff acknowledged in his affidavits to the patent office that the width of the nozzle slots was reduced so that he "would be able to use an amount of air at least reasonably comparable with the amount of air used in my nozzle." In the embodiment used for these tests, the Vits model slots were .030 inches. The Court opines that this represents a substantial departure from the scale of Figure 10 of Vits 250 and renders the comparative performance tests with the Gardner embodiment of little probative

value.

Despite Gardner's contentions that, on the basis of the test described in his affidavit, the Vits teachings did not involve a zone of static pressure, the examiner continued to reject the application although he did indicate that the affidavit would be entered in the file wrapper. (DX 300, p. 70).

39. There followed additional interviews with the examiner and then the plaintiff refiled, as a continuation application, serial number 570,671, on August 5, 1966, Claims 1 through 19 and abandoned the original application. These claims were again finally rejected by the patent office. (DX 300, p. 87).

40. This activity led to the filing of yet another amendment and substantial argument in support thereof on April 26, 1967. However, the

examiner refused to accept this amendment on May 18, 1967, and there followed application to the Board of Appeals from the examiner's decision. (DX 300, p. 102.) It is to be noted that in this unentered amendment the plaintiff recited that the Canadian Patent Office had allowed him a patent on the same subject matter and that, in connection therewith, consideration had been given to U.S. Patent 3,097,971, issued to Carlisle. Mr. Gardner further stated that the Carlisle patent did not show a suppression plate. Defendants point this out and contrast it with the plaintiff's action in not mentioning that the German Patent Office had refused, in defendant's exhibit 354, to issue a patent on the same subject matter because the examiner found that Carlisle did, in fact, teach everything that the plaintiff's claims disclosed. Thereafter, there were no further refer-

ences to Carlisle in the file wrapper and it was not listed by the examiner in the file wrapper as a reference he considered.

41. On May 25, 1967, plaintiff filed a third application as a continuation application and, in view of this effort, by letter dated June 16, 1967, abandoned the appeal of serail number 570,671. In the letter of transmittal, it was noted that the claims were "amended to make them very specific." The claims were amended to include a series of dimension ranges for the size of the nozzles, the "suppression plate," and the distance between the "suppression plate" and the web. (DX 300, p. 109.)

42. The Examiner finally rejected this third application (second continuation application), holding that the dimensions are within the skill of one ordinarily skilled in the art and not

unobvious. (DX 300, p. 116.) Plaintiff then asked for reconsideration in the light of his extensive affidavit in which he took a very strong position that the zone of superatmospheric pressure or static pressure described in his application was one in which there was "no flow of air through or into or paralleling the zone of static pressure. He argued that such a condition was not a teaching of Vits; that "it is true that the (Vits) says that static pressure is created in these cavities, but anyone with any experience in the flow of gases will realize that Vits must be using the term 'static pressure' in a sense entirely different from conventional usage. Actually, eddy currents in the spaces 15 will be unavoidable in the Vits device."

43. Apparently believing that Vits taught a static pressure with some fluid flow and turbulence, the Examiner re-

moved his previous rejection and held that Claims 1 and 8 were now considered allowable. (DX 300, p. 147.)

44. The Patent Office Board of Appeals thereafter affirmed the Examiner's earlier rejection of the process claims. The plaintiff petitioned for a rehearing and the Board thereafter adhered to its position. The ultimate allowance of the apparatus claims 1 to 8 by the Examiner brought an end to a very long (nearly six years) process of vigorous prosecution of the claims in the Patent Office.

The Accused Devices

45. On February 27, 1969, defendants Downham, Eckelaert and Frost filed United States patent application Serial No. 802,923, which was thereafter assigned to defendant TEC Systems, Inc. and matured into U.S. Patent No. 3,549,070. (DX 311, Fig. 8) on December 22, 1970. It is noted that the application date of TEC

070 was a little over four months prior to the date of issuance of the patent in suit which finally issued on July 1, 1969. Throughout the trial this accused device was referred to as a "TEC Standard Air Bar."

46. A subsequent application by Mr. Stibbe, a TEC employee, resulted in U.S. Patent No. 3,873,013 (DX 312), the physical embodiment of which is known as the TEC Hi-Float Bar.

47. Defendant TEC Systems manufactures and sells flotation dryer assemblies to its industrial customers. These assemblies are to support and dry webs of paper or similar materials which are processed through the bars after high speed printing. The air bars extend transversely across the dryer flotation assembly on opposite sides of the path of the web. In operation, these air bars direct jets of air to impinge

against the web to help float and dry the web and to create a dynamic cushion of static pressure with turbulent air therein having eddy currents and kinetic energy on which the web is also supported.

48. Both varieties of defendant's air bars employ structures that they referred to as Coanda bars. These relate to jets of air or gas under pressure expelled adjacent to a curved or rolled surface wherein the gas jet displays a tendency to follow the curved surface. The bars each have a pair of slot-shaped Coanda nozzle orifices, one along each side of the Coanda plate and recessed from the exterior of the plate. Air under pressure inside the bar is expelled through the two Coanda nozzle slot orifices, and when no web is present, the jets of fluid air follow the curved surface of the Coanda plate to collide with each other.

When a web is introduced in close proximity to the Coanda plate, the flow of pressurized air into the space between the plate and the web builds up a cushion of air under super atmospheric pressure. This cushion overcomes a great proportion of the Coanda effect so that the jets of pressurized air as they round the curved edge of the bar are peeled off the surface and forced into direct right angle impingement against the surface of the web. The jets combine with the cushion of pressurized air to provide substantial support and drying capability to the web.

49. In the so-called "TEC Standard Air Bar" (DX 311), air is injected into the pressure zone between the Coanda plate, the web, and the two slots through a center row of holes mid-way of the width of the plate. This string of jets also impinges against the web for support and drying utilization.

50. In the so-called "TEC Hi-Float Bar" (DX 312), the structure is the same but air is exhausted or withdrawn through the center row of holes from the cushion zone between the web, the Coanda plate, and the two parallel slot orifices and expelled to the atmosphere.

51. To support and dry the webs, the dryer flotation assemblies manufactured by TEC Systems employ a series of air bars which extend transversely across the dryer flotation assembly on opposite sides of the path of the web. The bars on one side of the web are staggered or offset from the bars on the other side of the web to utilize a sine wave pattern in the web. Installations of both Gardner bars and TEC bars used this sine wave device to tension the web, reduce edge flutter, and maintain the tautness of a web subjected to a variety of disturbing in-

fluences.

52. One of the issues at trial was whether the spacing between the web and the suppression plates of the accused bars exceeds double the nozzle width so as to infringe on the limitation of Claim 1 of the Gardner patent that the "minimum spacing between the web and said plate being a distance at least approximately twice as great as the nozzle slot width." TEC witnesses testified that those bars having slot orifices 0.060 inch wide should be operated so that opposed bars are 1/8 (0.125) inch or less aparat (1/16 inch or less from the web); and that those bars having slot orifices 0.075 inch wide be operated so that opposed bars are 1/2 (0.50) inch or less apart (1/8 inch or less from the web). Plaintiff points to evidence that the floater dryers manufactured by TEC are provided with a mechanism by

which the final position of the two banks of opposed bars can be very easily adjusted by simple jack screws. Plaintiff contends that, while the specifications and original spacing of the TEC devices might be less than the patent limitation, the machines were invariably adjusted at installation so that they operated beyond twice the nozzle slot width and, that it is no defense to a suit such as this against the manufacturer that the accused device was not intended by the manufacturer to be used in a manner contemplated by the patent, if, in fact, it is reasonably capable of use in that manner. Kearney & Trecker Corp. v. Giddings & Lewis, Inc., 306 F. Supp. 189 (E.D. Wis. 1969). This issue, as it bears on "anticipation," need not be resolved by the Court since other issues are dispositive of the case.

53. The Court is persuaded and finds that, prior to the appearance on the market of the accused devices, the high speed printing industry had become extremely skeptical of floater dryers. This dissatisfaction arose out of operating difficulties and resulted in a shift to the utilization of flame dryers. During this period, the Ben Offen Company was making the greatest number of sales with flame air dryers. With the advent of TEC bars in 1969, a resurgence of floater dryers occurred.

54. There are unique features inherent in the TEC air bars which exist largely because of the utilization of the Coanda effect to provide support for the web and drying capabilities:
(1) the jets of air issuing from the nozzle slots in TEC devices impinge in a direct right angle fashion on the web which results in a high heat transfer

rate conducive to rapid drying; (2) the presence of the "wall attachment phenomena" preserves the integrity of the jet; (3) since the nozzle slots are depressed from the plate and thus farther from the web, the slot cannot be touched by the web very readily and so will not become dirty or plugged easily; (4) the configuration of the nozzle is easier to manufacture while at the same time it is possible to maintain close tolerances of the slot widths in order to achieve uniformity of drying and web support; (5) choke-off of the jet is prevented because the jet issues from a slot nozzle located relatively far from the Coanda surface.

55. The TEC bars frankly utilize direct impingement of the jets for about 20 percent of the web support. The claims of the patent do not utilize jet impingement but depend almost exclusively

upon the zone of superatmospheric pressure induced between the jets.

56. Utilization of direct jet impingement and the turbulence within the zone of superatmospheric pressure in the TEC bars inherently provides greater drying capabilities.

57. The combination of a Coanda nozzle and a center row of holes for either greater pressure and more direct jet impingement or exhaustion permits great control and flexibility so that the peel-off point can be adjusted to a variety of conditions.

VALIDITY

58. Section 102 of Title 35 U.S.C. is entitled "Conditions for patentability; novelty and loss of right to a patent" and in pertinent part declares that "a person shall be entitled to a patent unless (a) the invention was. . . patented or described in a printed publi-

cation in this or a foreign country before the invention thereof by the applicant for patent . . . ."

Section 103 is entitled "Conditions for patentability; nonobvious subject matter" and provides that ". . . a patent may not be obtained though the invention is not identically disclosed or described as set forth in Sec. 102 of this title, if the difference between the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art of which said subject matter pertains."

59. As related to the case at bar, section 102 encompasses the issue of anticipation and section 103 the issue of non-obviousness. The Court has previously opined that the TEC devices may have infringed the claims of the Gardner '447 and has aluded briefly to the question

of anticipation of the claims. However, it is the Court's belief that this case is resolved on the question of non-obviousness, and hence no resolution of infringement or anticipation need be made.

60. It is axiomatic that to pursue intelligent inquiry on the issue of non-obviousness, we must determine what the "invention" of the patent is and what "the subject matter . . . patented is. The invention is delineated by the claims of the patent at issue--in this case Claims 1, 3, 4, and 8 of Gardner '447. These are the invention which measured by the claims, must be laid alongside the prior art of whatever form it is, whether writings, patents, or actual embodiments of ideas to ascertain whether the subject matter when (1) taken as a whole; (2) is non-obvious; (3) to a person having ordinary skill in the art;

(4) at the time the invention was made. 2 A. Deller, Walker on Patents §106 at 71. To make this analysis, the Court, having determined when the invention was made and what the level of ordinary skill in the prior art was, must then decide what differences, if any, exist between the applicable prior art and the claims in issue and whether or not the secondary factors described in Graham v. John Deere Co., 383 U.S. 1 (1966), are present.

TIME OF THE INVENTION

61. This factor is susceptible of rather precise determinations because the work which plaintiff did that ultimately resulted in the claims in issue from Gardner '447 all took place during an intensive period in 1963 of about twenty days. (PX 43); Gardner Tr. 150. During this period, variable devices to attack the problems of web support and drying capability were fabricated during the

day in the Overly shops and tested at night.

THE SUBJECT MATTER

62. The "inventions" being considered by the Court are the totality of Claims 1, 3, 4 and 8 of Gardner '447. The individual mechanical elements of the patent in suit are all old. Thus, the claims represent a combination of old elements. To be patentable such a combination must produce a synergistic result, that is, produce a greater result than the sum of the parts. Andersons-Black Rock v. Pavement Co., 396 U.S. 57 (1969).

LEVEL OF ORDINARY SKILL IN THE ART AT THE TIME THE ALLEGED INVENTION WAS MADE

63. The improvement of human life is a building process with each step upward in technology and science occurring when an individual takes as a foundation

the accumulated widsom of our forebearers and constructs thereon some improvement or invention containing the spark of inventive genius. Under appropriate circumstances and upon application, such a contributor is rewarded under our Constitution with a patent monopoly. But, 35 U.S.C. §103 requires that for such to be granted, the invention must not have been obvious to a person having ordinary skill in the art at the time.

This is a yardstick that is not particularly easy of application. The Court endeavors to assess the education, experience, and skill of those active in a field of endeavor at the time in question and then by injecting itself into the place of such persons at the time in question, determine whether the particular invention would have been obvious or non-obvious to such persons working in

the art to which the subject matter pertains, Malsbury Manufacturing Co. v. Ald, Inc., 447 F.2d 809, 811 (7th Cir. 1971). At trial here, each side produced witnesses skilled in the art involved; that is the utilization of fluid principles and mechanics to support and treat webs of flexible material without rollers or similar devices, as such art existed in 1963.

64. Most of the participants in the efforts which produced both the Gardner air bar and the Tec Standard and Tec Hi-Float bars, as well as the witnesses in the trial were all engineers, sophisticated in fluid dynamics and hydraulics. Some were directors of research efforts or of engineering staffs. Exceptions to this generalized statement would be William Overly, who testified essentially as a manufacturer and covered the period of the development of the

Gardner air bar and the licensing activities thereafter; and Thomas O. Kloehn, who was a patent attorney and an engineer although he had done patent work on paper making machines and printing machines. His testimony related to interpreting the intricacies of the file wrapper and explaining the rather extraordinary prosecution history of the patent in suit and procedures by the Patent Office.

65. Witnesses Downham, Forst, Gardner, Bachus, Dezalick, Eckelaert, Stibbe, and Daane were all engineers with an extremely high skill in the art. Hence, those skilled in the trade were engineers, designers, and researchers who were in the business of creating devices to meet the production needs of the paper, process printing, and metal treating industries. Those with ordinary skill in the art would, therefore,

typically be graduate engineers with a number of years of experience visualizing, designing, fabricating and testing web handling and treating equipment.

SCOPE AND CONTENT OF PRIOR ART

66. In the first office action on plaintiff's application, Serial No. 310,531, the Patent Office referred to the following prior patents:

No.	Patentee
602,799	Burns
2,654,159	Braebaek
2,928,185	Drew
3,181,250	Vits
3,216,129	Jepson

67. Burns was a basis for rejecting Claim 14 which is not at issue in the case at bar. Drew was cited "to show a rotatable drum carrying paper stock in combination with a plurality of adjustable conduits which jet air onto the paper." Subsequently, in application 641,384, Drew was cited as prior

art by the Examiner in rejecting Claim 2. Braebaek was cited "to show a drying zone through which the material to be treated is passed, said zone comprising a long narrow slit, but sufficiently narrow that turbulent air currents are avoided adjacent the plane of the treated material." Neither of these citations are relevant to the claims here.

68. The jepson patent was cited "to show an invention controlling the position of the material being treated by utilization of static pressure at the two sides of the material. In his remarks attached to amendments to his second application, Serial No. 570,671, dated February 15, 1967, plaintiff agreed with respect to Jepson that it disclosed the positioning of material between opposing nozzles, but argued that using opposing nozzles to position material was an old concept -- and that was not what his application

claimed. With a dismissal of Jepson as irrelevant, this particular prior art seems to have been ignored by the parties thereafter, both in the patent prosecution and at trial.

69. The Carlisle patent, No. 3,097,971 (DX 308), was not mentioned nor cited by the Patent Office examiner in the history of the prosecution of the patent in suit. The only mention of it appears in the "remarks" portion of the amendment which plaintiff submitted after final rejection of the second application (Serial No. 570,671). Defendants contend that inasmuch as the amendatory papers were untimely, the papers could be refused entry and consideration -- and that, hence, it must be presumed that the examiner did not consider Carlisle. Defendant further opines that, even if the Examiner did review the untimely amendment, he would have been

dissuaded from considering Carlisle '971 because plaintiff did not provide a copy and made various misrepresentations to the Examiner.

The import of this is that defendant contends that the facts in evidence here do not support an inference that the Examiner considered Carlisle and consequently plaintiff's patent in suit is not entitled to a presumption of validity as to Carlisle.

70. Hence, the cited and considered prior art which is relevant to the Claims 1, 3, 4 and 8, which were among those ultimately allowed and which are the only ones involved in this case, narrows down to Vits '250 and possibly Carlisle '971.

If the Court accepts defendant's contentions regarding Carlisle, the uncited prior art which the Court considers relevant and which emerged at trial consists of:

No.	Patentee	Exhibit No.
3,097,971	Carlisle	DX 308
RE 24,144	Dungler	DX 306
3,041,739	Meier-Windhorst	DX 307

A British Iron & Steel Research Association article (Jan., 1967) entitled "The Hover Pulley." (DX 321)

A British Article reprinted from the Journal of the Iron and Steel Institute by W. G. Jaffrey and Genefer M. Boxall, entitled "The Support of Thin Steel Strip on Air Cushions." (May 1963). (DX 321)

Having surveyed this prior art, both cited and uncited but noticed by the defendant under 35 U.S.C. §282 in the light of the exposition of fluid flow which the numerous exhibits and demonstrations developed the Court opines that Vits '250, Carlisle '971, and the two British Trade Journal articles are all important on the question of boviousness with Meier-Windhorst '739 and Dungler '144 of considerably lesser value.

VITS '250

71. By far the most pertinent prior art which must be considered by the Court is the Vits patent, No. 3,181,250 (DX 304). This is because the essence of the claims -- as plaintiff himself proclaimed time and again at trial, is the utilization of a zone of static pressure to support and dry the web. Throughout the testimony, the term "static" was used to describe an pressure that was stable, ambient, not changing, and relatively uniform as contrasted to "velocity" or "dynamic" pressure which described pressure related to forces that were unstable, changing, and constantly variable. In demonstrations of his principle, plaintiff satisfied the Court that the primary reason that a web is "floated" by a Gardner air bar is the existence of an area of superatmospheric pressure which is created transversely

across the web between the nozzle slots and between the web and the "suppression plate." The issue of the case was whether or not the prior art taught this utilization of superatmospheric pressure to "float" a web and the other components of the claims.

72. Vits '250 was filed September 21, 1961, and is entitled "Apparatus and Method of Drying Web Material by Directing Hollow Gas Jet Streams Against Opposite Faces of the Web." The patent is rather lengthy and makes some thirteen claims. The applicant was clearly addressing his theories to a variety of webs being treated under a variety of conditions. There are a number of figures illustrating various embodiments of the claims, of which Figure 10 most closely approximates the plaintiff's embodiment of the claims of Gardner '447. A great deal of illuminative language

appears in the Abstract of Disclosure.

After describing the various problems technicians were having in floating and drying high speed webs, Vits said:

> The method . . . is characterized in that the material is exposed to the influence of blower jets arranged at least in rows transverse to the direction of feed and having edge flows directed towards each other, said edge flows confining spaces tapered in the direction towards the web, in which a static excess pressure is generated and web-carrying air cushions are formed.
>
> This method, arrived at after numerous experiements and tests, solves the problem on hand because the space confined by the blower jets in such a way as to form the hollow jets is primarily filled with treating medium entirely at rest. It is thus capable of taking up the edge flow deflected at the web whereby a static excess pressure relative to adjacent flows is formed. Media such as air being under static excess pressure within a confined space will cause the formation of some sort of cushion. Vits '250 (DX 304) Column 2, lines 55-71. (emphasis added.)

Thus it clearly appears that in 1961, Hilmar Vits was not only teaching the

use of a cushion of excess static pressure to float a dry air cushion, but was also teaching that the zone of excess static pressure w-s occupied by a medium "entirely at rest." To the Court this sounds like exactly the concept that Gardner argued so vigorously to the examiner on page 12a of his original brief and in asking for reconsideration of rejection of his third application, i.e., that the zone was one in which there was "no flow of air through or into or parallelling the zone of status pressure."

Claim 1

73. The Vits Abstract sets forth at column 3, lines 3-28, Vits' explanation for the progressivity and elasticity that produce the equilibrium which is the means of positioning the web called for in the first element of plaintiff's Claim 1.

74. The "suppression plate" of plaintiff's Claim 1 appears to the Court o be what Vits calls a deflector 44 in figure 10 of Vits '250 as described in column 9, line 38. Its function is identical and plaintiff's requirements that it be spaced from the web "as closely as is mechanically practicable," the Court views as a limitation without a function. Progressivity is a function of how close the plate is to the web, and that location must be decided taking into consideration other factors such as volume of air flow, the weight of the web space needed for sine wave positioning, the lateral air flow needed to control edge flutter, and so forth.

75. In examining the prior art of Vits in conjunction with the elements of Claim 1 of Gardner '447, and having observed the numerous experiments and demonstrations at trial, the Court

concludes that the last element of Claim 1. A means for discharging gas under pressure through the nozzle slots for defining a zone of static pressure between the plate and the web, is clearly taught by Vits. The Court further concludes that the balance of the elements of plaintiff's Claim 1 represent limitations that do not really differentiate Gardner '447 from the Vits teachings and do not affect the utilization of the principles of fluid dynamics taught by Vits. Vits taught placing the slots on opposite sides of the plate or deflector and had said slots extending continuously across the web. Vits taught a means for discharging gas under pressure through nozzle slots so as to define a zone of static pressure between the web and the plate. The other two elements of Claim 1 of Gardner '447, "the minimum spacing

between the web and said plate being a distance at least approximately twice as great as the nozzle slot width" and "the maximum spacing of the plate from the web never being greater than the width of the plate, the product of the width of the place and the spacing of the plate from the web being less than twenty times the nozzle slot width," the Court views as artificial dimensional limitations that add nothing to the claims, that are of no constructive significance, and are essentially meaningless. The evidence at trial never showed that departing from these formulae would necessarily cause an air bar to function or fail. In other words, these claims are irrelevant.

Claim 3

76. The two elements which Claim 3 adds to those of Claim 1 are: "both the plate and the nozzle slots extend

laterally beyond the side margins of the web" and "escape of gas laterally of the web holding the web margins laterally tensioned and flat."

Both of these are clearly taught in Vits.

Figure 7 of Vits (DX 304) shoes the web being narrow or the nozzles being wider than the web width. Expert Daane testified that he had never seen a situation where a web was conveyed by a device which did not extend beyond the extremities of the width of the web. (Daane Trans. p. 2029).

Vits '250 in column 3, lines 44-52 addresses escape of gas laterally of the web:

> The build-up spaces proper need not be closed off at the faces by additional jets, as the reactions of the solid walls of the drier, confining the treatment space along the edges of the web on the course of the flow of the medium are already felt here. Moreover, the face area of the build-up spaces

is small in relation to the large build-up areas extending over the entire width of the web, especially when arranged diagonally relative to its direction of feed.

It deals with both lateral escape and problems of edge flutter in column 5, lines 1-11:

> The build-up space terminates at the edges of the web and is open at the side so that the excess pressure escapes within the area of the web edges in a direction transverse to the direction of web feed, producing a cross flow away from the web edge that might give rise to fluttering movements of the web edges. This fluttering would normally be promoted by the flow-off between rows of nozzles extending in parallel. For keeping the edge at rest, it is suitable to minimize the cross flow in the area of the edge as far as possible or to baffle it.

Claim 4

77. Claim 4 of the patent in suit likewise incorporates all of the subject matter of Claim 1 and adds two other requirements: (1) "the nozzle slots are so positioned angularly as to direct opposing jets of gas convergingly toward

the web and into the space between the web and the plate," and (2) "such space providing clearance for change in direction of the gas of said jets to move in opposite directions from a zone of static superatmospheric pressure established by the jets between the plate and the web."

78. The concept of having nozzle slots so positioned as to have opposing jets of gas converging toward the web abounds in the diagrams, abstract, and claims of Vits '250. Figure 10 of Vits distinctly portrays this with the resulting triangular zone of pressurized medium.

In column 2, lines 57-60, Vits describes jets:

> . . . having edge flows directed towards each other, said edge flows confining spaces tapered in the directions toward the web, in which a static excess pressure is generated. . . .

Claim 4, line 34 indicates:

> It is further desirable that the jet screens be directed towards each other to maintain their effort to fill the build-up spaces during undisturbed flow.

At column 5, line 72, in describing one adoption of his apparatus and method, Vits talks of:

> . . . hollow jets the edge flows of which are directed towards each other and confine a space located on the side of the baffle facing the web and tapered or constructed in the direction toward the web.

or at column 8, line 8:

> . . . so that thedirections of flow of the hollow jets produced by the baffles 13 in both groups are directed towards each other.

79. The second aspect of Claim 4, that the space between the web and the suppression plate provides clearance for the converging jets of fluid to collide and turn back upon themselves as their velocity is overcome by the area of superatmospheric pressure between the jets, is not set forth verbatim in

Vits '250, although the Court finds such a concept to be obvious given the configuration of an air bar described in figure 10 thereof at 159 of the file wrapper. Vits says at column 9, line 49:

> . . . the crest edge of the cushion formed by the top of the triangle is hypothetical only, but the cushions . . . flatten at their upper portions so that the web is supported over a relatively wide area.

Furthermore, in a description in column 10, line 14, Vits says:

> The hollow jet screens confined by the marginal flows 49, 50 and 51, 52 thus have an opposite directional component in addition to the primary flow directed towards the web.

In the file wrapper (DX 300) of the patent in suit at page 145, Gardner argued to the examiners that all of the references of record show jets which are directed toward the face of the web, and in none of them was there any concept of turning the air flow upon itself so that the stream flows in

opposite directions along the face of the web. However, on cross-examination, Gardner admitted this structure and operation is also clearly found in Carlisle '971 (DX 308) (Gardner T. 3177-78.)

Claim 8

80. This claim, the last of those involved in the suit at bar, incorporates all of the subject matter of Claim 1, plus the three requirements: (1) air bars offset longitudinally of the web; (2) each bar comprising positioning structure as defined in Claim 1; and (3) the offset of said bars being sufficient to effect deflection of the web in passing the bars successively. All of these elements are taught in Vits. Offsetting the bars longitudinally of the web is discussed and diagramed at length. The idea of each bar constituting a positioning structure is also covered

in detail. Sine wave positioning, which is the essence of the third requirement, is taught in figure 4 and figure 23 of Vits.

81. The only difference between the claims of the Gardner patent and the prior art Vits '250 (DX 304) was that in Vits, the so-called baffle plate 44 (figure 10) is below the nozzle slots and not as close to the web as the nozzles. Dr. Daane conducted a series of experiements with a scaled model of a Vits bar (figure 10) using wooden inserts to vary the distance from the baffle plate to the surface of the web. These experiments, repeated during the trial, demonstrated clearly that a Vits embodiment devleoped both static and kinetic energy, that there was no difference in the type of static pressure under the Vits or the Gardner teachings, and that the Vits device worked entirely

satisfactorily in "floating" a web. The pressure profiles differed somewhat depending on such factors as the pressure in the plenum (Sp.); the angle of which the jets struck the web; the size of the orifice and the relative closeness or remoteness of the web to the suppression plate or baffle plate. However, the differences were in quantity, not kind, and might or might not be beneficial depending upon how important problems such as weight, strength, dryness, edge flutters, and support of the web were to one.

82. The air bars of Carlisle, Vits, TEC, and possibly Dungler all have both kinds of web supporting forces, that is: (1) direct kinetic impingement of the jets, and (2) static pressure acting over a relatively broad zone.

Dr. Daane testified that his opinion regarding the obviousness of the Gardner invention as related to the prior art was

based on looking at one patent and comparing it with another and that the only knowledge he would need to come to a conclusion was a general fluid mechanics knowledge and was not based on hindsight. The Court notes that those with ordinary skill in the art involved here were graduate engineers with in-depth knowledge of fluid mechanics. To such individuals, it would be obvious to bring the plate 44 of Vits up closer to the web as one sought to maximize static pressure support and diminish the impingement of the jets.

83. A difference between the Gardner claims and the Carlisle Patent No. 3,097,971 (DX 308) was the fact that the Carlisle patent did not show the transverse slots extending beyond the edges of the web. Such is also true of the prior art described in the two British publications (DX 321 and DX 322). But

this was notoriously old in the art. As noted above, the expert Daane had never seen an installation where a web was conveyed by any device that did not extend beyond the extremities of the width of the web. Furthermore, such is clearly taught by Vits.

84. The Meier-Windborst prior art patent (DX 307) teaches the clashing of jets flowing along the web to produce "a stable pressure zone on each of the two sides of the web between the two opposite baffle elements and maintains the web in free suspension between the baffle elements." (column 1, line 51.) In the Meier-Windborst patent, there is a zone of static pressure existing between the web and other objects of various types collectively described as "baffles." As the Court understands Meier-Windborst, these baffles perform a function similar to Gardner's "suppression

plate." The Court views Meier-Windborst as relevant prior art that teaches the use of "a stable pressure zone" and hence important on the issue of obviousness. However, it finds the concept of a zone of superatmospheric pressure much more difficult to conceptualize through Meier-Windborst than under the teachings of other prior art.

85. The Dungler Patent No. Re 24,144 (DX 306) is uncited prior art which may or may not have been considered by the patent office as it contemplated the claims at issue. Its relevancy is hotly contested by the parties. The Court finds it pertinent insofar as it shows clearly that those working in the art in 1953-56 were aware of the creation of air or vapor cushions created between the opening of discharge nozzles and treated webs.

However the thrust of Julien

Dungler's patent claims is the establishment of mathematical ratios involving the distance between the plane of the web and the nozzles as contrasted to the sum of the cross sections of the end faces of the bars and the nozzles as well as the length of the slots. The teachings of these ratios was aimed at increasing the drying or treating efficiency of the device rather than support. In fact, the avowed purpose of Dungler's ratios was to "avoid the formation of air or spent fluid cushions, as well as eddy currents."

The Court finds Dungler to be prior art of only minor relevancy on the issue of obviousness.

86. All of the prior art air bars, despite different nozzle sizes, plenum pressures, nozzle directions, or other variations do, in the Court's view, depend upon the creation of a zone of

superatmospheric pressure to support the web. Whether that support is weak or strong, uniform or variable, progressive or not, as well as the proportions of static pressure and kinetic pressure are matters which vary as these factors are manipulated. But they do not exhibit qualitatively different phenomena, all used static pressure to some degree; all have supression plates or structures equivalent thereto; all have nozzle slots extending transversely of the web, and spaced on opposite sides of the suppression plate or similar structure. The dimensional limitations of Gardner's '477 are essentially meaningless. In short, the Court finds all of the essential elements of the patent at issue in prior art forms. All of the individual mechanical elements of the "invention" of the patent in suit were hence old and the combination of such old elements was

accomplished in accordance with the teachings of the Vits Patent 3,181,250 (DX 304); the Carlisle Patent 3,097,971 (DX 308); the two British articles "The Hover Pulley" of January 1962 (DX 321) and "The Support of Thin Steel Strip on Air Cushions" from the paper of the British Iron and Steel Research ASsociations of December 17, 1962; together with, to a much lesser degree, the teachings of the Dungler Patent Re 24,144 (DX 306) and the Meier-Windhorst Patent 3,041,739 (DX 307).

87. Having proceeded through the analysis required under Graham v. John Deere Co., supra, the Court expressly finds that the subject matter of the patent claims in issue would have been obvious to a person skilled in the art at the time the alleged invention was made.

88. The Court further finds that

the combination of old elements does not produce a synergistic result, i.e., a greater result than the sum of the parts.

89. Nor can the Court find any secondary factors such as long felt, unsolved needs, failure of others in the field, or commercial success to influence the determination of obviousness.

90. In view of these findings, the Court finds that the claims in suit are invalid and unenforceable for obviousness under 35 U.S.C. §103.

Applicability of 35 U.S.C. §285

91. Prior to 1946, there was no provision in the patent law for the award of attorney's fees. By an act amending Revised Statutes 4921 (U.S.C.A., Title 35, Patents, Sec. 70), Congress, in 1946, added language stating:

> The court may in its discretion award reasonable attorney's fees to the prevailing party upon the entry of judgment in any patent case.
> [U.S. Code Cong. Service 1946, p. 744.]

The intent of Congress was made clear by Senate Report No. 1503, June 14, 1946:

> It is not contemplated that the recovery of attorneys' fees will become an ordinary thing in patent suits, but the discretion given the court in this respect, in addition to the present discretion to award triple damages, will discourage infringement of a patent by anyone thinking that all he would be required to pay if he loses the suit would be a royalty. The provision is also made general so as to enable the court to prevent a gross injustice to an alleged infringer.
> [U.S. Code Cong. Service 1946, p. 1387.]

Thus, Congress made the provision "general"; it was not meant to apply only in favor of plaintiff-patentees or only in favor of alleged infringers. It was not meant to apply solely in situations where infringement had been intentional

or in situations where a patentee had acted fraudulently. Kaehini, et al v. The Diffraction Company, Inc., 173 U.S.P.A. 705, D.C. D. Md. (1972).

The Court in Kaehni went on to comment on the case law that fleshed out the outlines of the provision. It opined that "the exercise of discretion in favor of the allowance of attorney's fees should have its source in unfairness or bad faith on the part of the losing party or in some other equitable consideration such as vexatious or wholly unjustified litigation which makes it grossly unjust for the prevailing party in the particular case to bear the burden of his own counsel fees.

92. In 1952, Congress amended the law and added the phrase "in exceptional cases." Decisions since indicate that the change in wording did not change the standard. Exceptional circumstances

have been interpreted as incorporating concepts of fraud, malice, bad faith, or inequitable or unconscionable conduct on the part of the losing party. Uniflow Manufacturing Co. v. King-Seeley Thermos Co., 428 F.2d 335, 341, cert. denied 400 U.S. 943 (1970). Examples are those in which the patent has been knowingly, intentionally infringed and those in which the patent was originally obtained by fraud. Another example is a plaintiff-patentee who prosecutes on an obviously invalid patent. It has also been held that a case can be exceptional under section 285 where the allegation of infringement is frivolous as asserted without reasonable care or sufficient justification. Ellipse Corporation v. Ford Motor Company, 452 F.2d 163, (7th Cir. 1971), found such case constituted "exceptional circumstances although the facts there were not ade-

quate for an award."

93. A line of cases holds that when the invalidity of a patent is so obvious that anyone skilled in the art, and any competent attorney, must have recognized prior to trial that the patent was invalid, the patent action is prosecuted in bad faith and the defendant may be entitled to attorney's fees under 35 U.S.C. §285. Dole Valve Company v. Perfection Bar Equipment, Inc., 318 F. Supp. 122, 124 (N.D. Ill. 1970).

94. The guidelines for the applicability of section 285 become relevant here because both parties have demanded attorney's fees pursuant to it. Since TEC Systems, Inc. is the prevailing party, the Court must determine whether this case is such as to bring section 285 into play.

95. Defendants alleged throughout the trial that plaintiff was guilty of

not only a lack of candor in dealing with the patent office examiner, but that it also engaged in deliberate, false and material representations to the patent examiner that materially misled that office in its consideration of the applicants' various submissions. Six specific misrepresentations were argued by defendants in their post trial brief and proposed findings. They may be briefly described as:

(a) rigged and misleading tests of Vits' embodiment;

(b) misrepresentation by Gardner that his air bars had been used commercially at speeds of 2,000 feet per minute at R. R. Donnelly Company;

(c) misrepresentations as to the elimination of edge flutter;

(d) misrepresentations as to novelty and function of spacing requirements of the various elements of his

claim;

(e) misrepresentations made in various documents of the file wrapper and plaintiffs' exhibits in Court regarding his PX 31;

(f) Gardner's failure to advise examiner that the German Board of Appeals had rejected his application on the Carlisle patent while telling the United States examiner that the Canadian examiner allowed the Canadian application over Carlisle.

96. The Court has considered each of these allegations within the context and history of this patent application. Mindful of the law's requirement that the exceptional case is not limited to intentional fraud but that an unambiguous showing of extraordinary conduct is required, Airtex Corp. v. Shelley Radiant Ceiling Co., 536 F.2d 145 (7th Cir 1976), the Court is of the opinion that items

(b-f) above do not rise to the level of misconduct required. If they were misrepresentations, they were in the nature of contentions advanced by an enthusiastic proponent of his invention rather than the calculated conduct of one setting out to defraud the U.S. Patent Office, the Court, and the public.

97. Item (a), the allegation of misleading tests of Vits 250, requires separate consideration. It arises for a variety of reasons. Testimony at trial showed that during the prosecution of the patent in suit, it was common knowledge around the Overly plant that "Vits was giving Gardner fits" (Downham T. 1283). During the initial phases of his efforts to obtain a patent, Gardner was consistently being rejected based on Vits' teachings. It was clear that, if his final amendment of claims was to succeed, Gardner would have to somehow

destroy Vits as obvious prior art.

98. Gardner submitted to the Patent Office an affidavit recounting comparative tests made of an embodiment of the Vits air bar as set forth in Figure 10 of Vits' '250 and an embodiment of a standard commercial Gardner air bar pursuant to Figure 7 of application No. 310,531. He professed to the Patent Office that, in his performance comparisons, he scaled the component parts of Vits "to be as nearly as possible identical with the showing of Vits Figure 10 . . . except that it was necessary to reduce the width of thenozzle slots so that we would be able to use an amount of air at least reasonably comparable with the amount of air used in my nozzle. To this end, we made the Vits nozzle slots .030 inches in width as compared with .027 inches in width of the slot in my existing device as shown

in Fig. 7 of this application."

99. Defendants vigorously contend that plaintiff intentionally altered the dimensions of his construction of a Vits embodiment so that the test results were inaccurate, fraudulent, and misleading. Gardner said he endeavored to make everything identical that was posisble; vertical spacing of the nozzle heads from each other; air was supplied under the same pressure and the pressure were varied through identical ranges in the tests thereafter performed. Witness Downham said that what Gardner did was make it virtually impossible for the Vits bar to operate (Downham T. 1318). He further testified that a faithful reproduction of Vits Figure 10 would have meant a nozzle slot width of in the neighborhood of one-tenth of an inch; that Gardner made the width of the suppression plate two and one-quarter inches

and made the length of the angled jet one-half inch, which made the build-up space very large, so large, in fact, that it would virtually be impossible for a .030 orifice to maintain enough flow to keep it (the build-up space) filled (Downham T. 1085).

Considerable trial time was spent in making engineering calculations as to the appropriate velocities if Gardner had accurately compared the performance of the two devices. At one point, Downham testified that, for a faithful to-scale embodiment, the Vits orifice should have been .145 inches or 4.83 times greater than what Gardner used (Downham T. 1095).

100. Witness Daane and Stibbe echoed Downham on the technical impact of Gardner's dimensions of the Vits embodiment. All three felt that the Vits patent was a mdeium speed air bar

and clearly taught the use of a much lower velocity pressure than Gardner.

101. It is true that in the early portions of the trial, the Court and counsel heard a great deal of testimony concerning the pressure profiles developed by plaintiff to demonstrate his belief as to the differences between the Gardner claims and the Vits claims as exemplified by the Gardner version of Vits (PX 31). To the Court, the thrust of this evidence seemed to be that the patent in suit taught web support by uniform static pressure and that Vits taught web support by velocity or impingement pressure. Such a differentiation in quality would have been very important. However, as the trial progressed, and particularly after experts Stibbe and Daane had testified and demonstrated their version of a Vits embodiment with varying thicknesses of wooden inserts so as to

vary the distance between the web and the suppression plate, the Court became convinced that the variations were of quantity rather than quality and that the "cushions" of Vits were the "zone of static pressure" of Gardner. Moreover, the question at this stage is whether or not the examiner was purposefully misled or defrauded by the applicant. The Court believes not. The Patent Examiner very early in the application process found Vits to teach a zone of superatmospheric pressure (DX 300, p. 47). Many of the concepts discussed and demonstrated at trial were at the edge of a fluid mechanics experimentation in 1963. Honest protagonists, even highly trained experts, may well disagree as to the source of aerodynamic phenomenon and this the Court believes is what occurred here.

102. A finding that a case is extra-

ordinary so as to justify attorneys' fees under 35 U.S.C. §285 requires an unambiguous showing of misconduct, fraud or lack of good faith. Arbrook, Inc. v. American Hospital Supply Corp., 645 F.2d 273 (1981). Since a finding is discretionary and will be reversed on appeal only where there has been abuse of such. Here the Court finds that the prosecution by Gardner, while spirited, prolonged and perhaps even abrasively stubborn, was nonetheless carried on in good faith. Hence section 285 is not applicable.

SUMMARY

Jurisdictions and venue being uncontested and the Court having set forth its findings and conclusions herein, it is ADJUDGED that:

(1) the patent in suit is invalid as obvious under section 103;

(2) there is, therefore, no infringement;

(3) the case is not an extraordinary case under 35 U.S.C. §285.

Accordingly, it is hereby ORDERED that judgment be entered for the defendant and that the plaintiff's complaint be DISMISSED.

SO ORDERED this 2nd day of August, 1982, at Milwaukee, Wisconsin.

/s/ Robert W. Warren
UNITED STATES DISTRICT JUDGE

UNITED STATES DISTRICT COURT

FOR THE

EASTERN DISTRICT OF WISCONSIN

THOMAS A. GARDNER

vs. JUDGMENT

TEC SYSTEMS, INC., a Wisconsin corporation, ROY E. DOWNHAM, JACK ECKELAERT and JOHN W. FROST

This action came on for consideration before the Court, Honorable Robert W. Warren, United States District Judge, presiding, and the issues having been duly heard and a decision having been duly rendered.

It is Ordered and Adjudged that Plaintiff's complaint be dismissed and judgment entered for the defendant.

Dated at Milwaukee, Wisconsin, this 2nd day of August, 1982.

SOFRON B. NEDILSKY
Clerk of Court

By Carol Shupe, Deputy

83-2043

Office - Supreme Court, U.S.
FILED
MAY 18 1984
ALEXANDER L. STEVAS,
CLERK

Case No.

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1983

THOMAS A. GARDNER,

Petitioner,

vs.

TEC SYSTEMS, INC., a corporation of Wisconsin, and ROY E. DOWNHAM, JACK ECKELAERT and JOHN W. FROST,

Respondents.

APPENDIX TO PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

VOL. II

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633 West Wisconsin Avenue
Milwaukee, WI 53203
414-271-6555

Counsel for Petitioner,
THOMAS A. GARDNER

July 1, 1969 T. A. GARDNER 3,452,447

WEB POSITIONING MEANS AND METHOD

Original Filed Sept. 23, 1963 Sheet 1 of 3

FIG. 2.

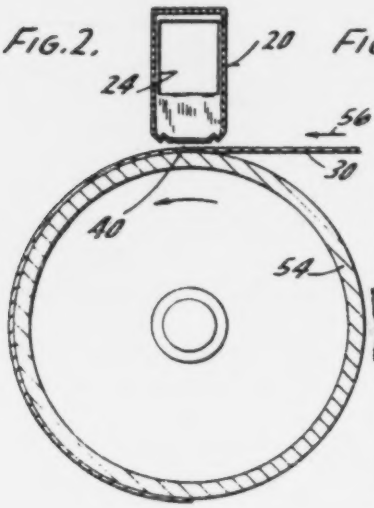


FIG. 1.

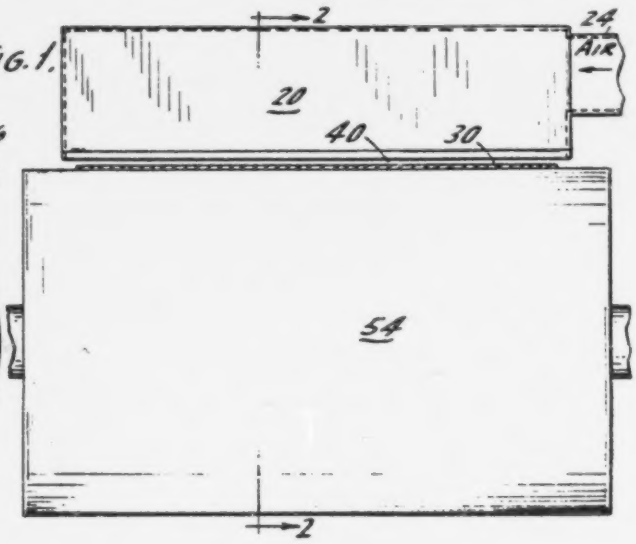


FIG. 4.

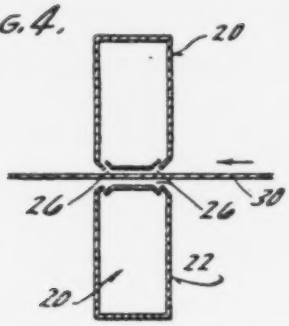


FIG. 3.

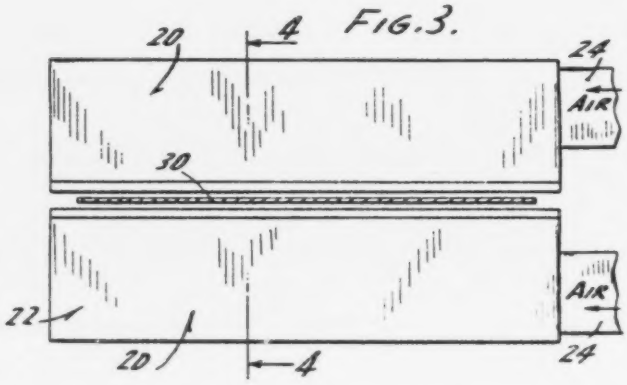


FIG. 5.

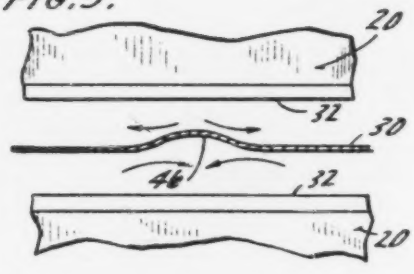
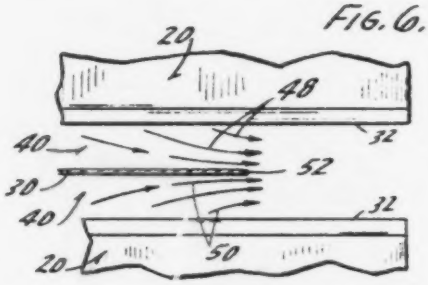


FIG. 6.



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July 1, 1969 T. A. GARDNER 3,452,447

WEB POSITIONING MEANS AND METHOD

Original Filed Sept. 23, 1963 Sheet 2 of 3

FIG. 7.

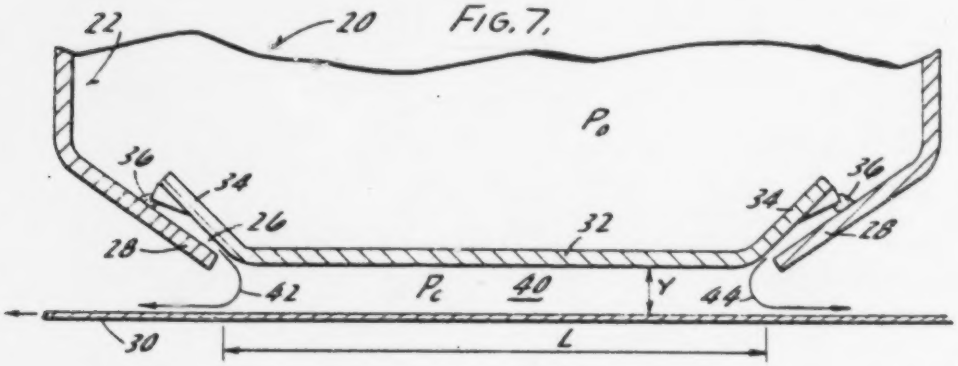


FIG. 8

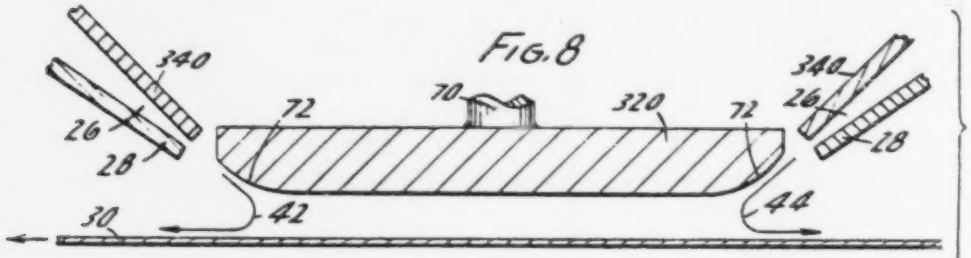


FIG. 9

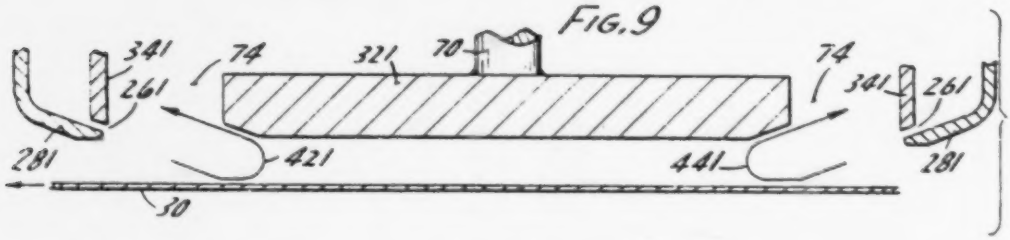
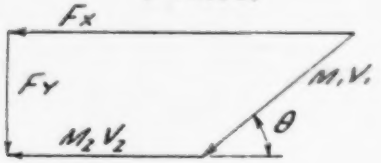


FIG. 10.



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WEB POSITIONING MEANS AND METHOD

Original Filed Sept. 23, 1963 Sheet 3 of 3

FIG. 11.

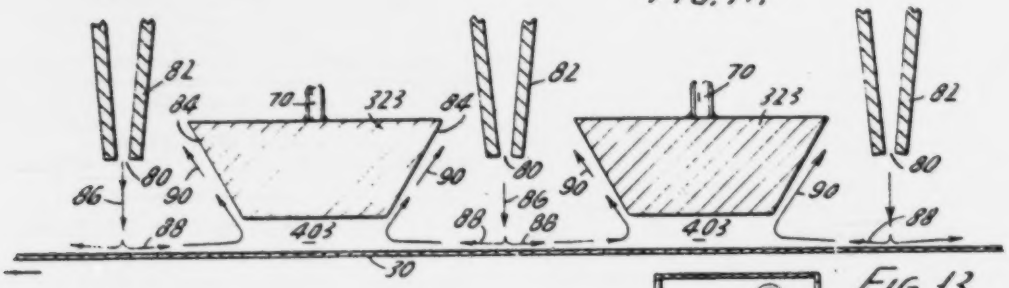


FIG. 12.

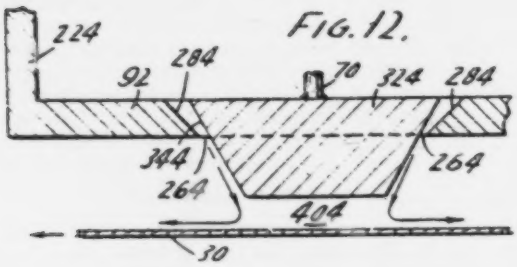


FIG. 13.

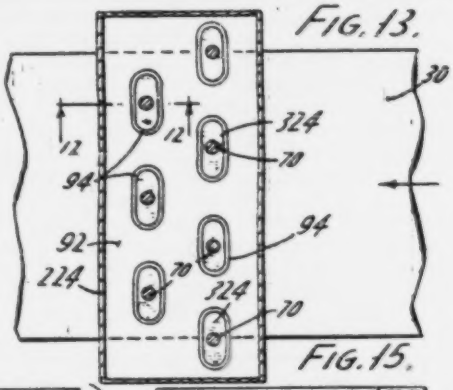


FIG. 14.

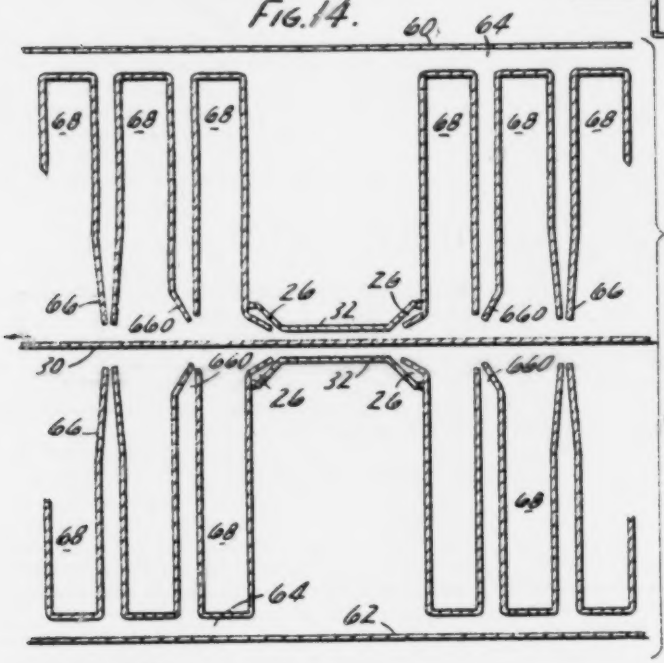


FIG. 15.

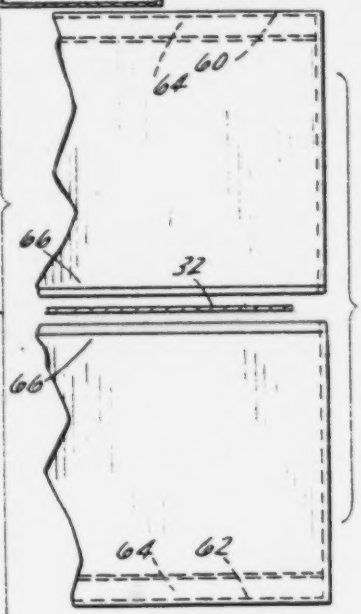
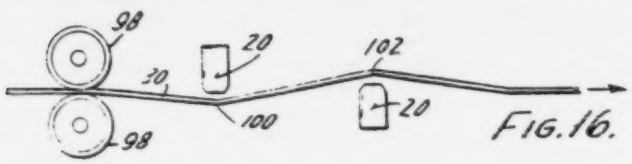


FIG. 16.



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United States Patent Office

3,452,447

Patented July 1, 1969

3,452,447

WEB POSITIONING MEANS AND METHOD

Thomas A. Gardner, 513 Clark St.,
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Continuation of application Ser. No. 570,671, Aug. 5, 1966, which is a continuation of application Ser. No. 310,531, Sept. 23, 1963. This application May 25, 1967, Ser. No. 641,384

Int. Cl. F26b *13/20*

U.S. Cl. 34—156 8 Claims

ABSTRACT OF THE DISCLOSURE

For positioning a moving web either in space or against a heat exchange surface, a zone of superatmospheric pressure is established by disopsing a suppression plate as close to the face of the web as is mechanically practicable and then directing between the web and plate obliquely in opposition to each other elongated jets of gas which are continuous across the web. The resultant reaction pressure develops as the gas is turned back upon itself at the edge of the pressurized zone to flow in opposite direction longitudinally of the web.

This application is a continuation of Ser. No. 570,671, filed Aug. 5, 1966, which in turn is a continuation of Ser. No. 310,531, filed Sept. 23, 1963, both now abandoned.

This invention relates to a web positioning means and method.

A major objective of the invention is to position a floating web without contacting the web with any substance but a gas, normally air. In the past, it has been proposed to support or float a web on jets of air. Mere support may be achieved through the use of the apparatus hereinafter disclosed but, in referring to the positioning as an objective of the invention, I have in mind something more than mere support, since I can accurately locate the moving web in space and also am able to hold it flat in one plane, smoothing out existing wrinkles and holding the margins in line.

In other applications of the invention, the moving web may be held in intimate contact with a surface such as that of a roll or platen, to promote heat exchange, for example. In still other applications of the invention, the web can be deflected and by deflecting it first in one direction and then in the other from its direct path, I may provide the equivalent of an accumulator to absorb momentary irregularities in feed of the web.

A basic principle of the present invention consists in the use of opposed mutually spaced air jets which are substantially continuous beside a suppression plate that intervenes between the jets, the combination of the jets and in conjunction with a suppression plate serving to create a pressure zone that subjects the web to static pressure over a large areas as distinguished from the localized kinetic effect of jets as such.

In a preferred organization, I use a structure which I characterize as a web stabilizing air bar extending transversely of the moving web for a distance at least equal to and preferably exceeding the total width thereof. The bar includes a housing which provides a plenum chamber. The structure of the bar is such that slots are continuous along the sides of the bar and direct jets convergently toward each other and toward the space between the plate and the web. The pressure zone between the jets and the suppression plate and the web is sufficintly closed so that the air of the jets is forced to change its direction and to flow in opposite directions along the face of the web away from the enclosed zone. The change in direction of momentum builds up pressure in the zone between the suppression plate and the web. Because of the large areas involved, even a small increase in pressure can provide a very considerable force acting on the web.

In the desired practice of the invention, the clearance between the suppression plate and the web is so slight that the slight loss of pressure resulting from flow out of the ends of the space does not usually detract measurably from the result. In fact, parallel flow from below and above the web laterally over the free margins at the sides of the web has very important advantages in smoothing out wrinkles or ruffles in the margin, the effect being so pronounced that manual displacement of the margins is followed by restoration of the margin to its initial position with a snap action as if the margin were subject to the action of a spring.

As will be explained, if the suppression plate is far removed from the web the effect will be lost. If the suppression plate does not extend completely across the web, the pressure zone can either be enclosed physically or the continuity of the nozzle can be extended around the end of the space to preclude loss of pressure.

In the drawings:

FIG. 1 is a view in side elevation of a roll such as a heated drying roll with which a stabilizing air bar is associated, the web being shown in section and the shaft supporting the roll being fragmentarily illustrated.

FIG. 2 is a view taken in section on the line 2—2 of FIG. 1.

FIG. 3 is a view showing in section a web floated between two stabilizing air bars in accordance with the present invention, the air bars being illustrated in side elevation.

FIG. 4 is a view taken in section on the line 4—4 of FIG. 3.

FIG. 5 is a greatly enlarged detail view showing diagrammatically the action of the air bars of FIG. 4 upon a wrinkle in an intermediate portion of the web.

FIG. 6 is a fragmentary detail view on an enlarged scale showing diagrammatically the relationship between the air bars and the margin of the floated web.

FIG. 7 is a greatly enlarged fragmentary detail view in cross section through a portion of an air bar embodying the preferred construction.

FIG. 8 is a fragmentary detail view of an air bar showing, diagrammatically, a modified construction.

FIG. 9 is a view similar to FIG. 8 showing a further modified construction.

FIG. 10 is a vector diagram.

FIG. 11 is a view similar to FIGS. 8 and 9 showing a further modified construction.

FIG. 12 is a fragmentary detail view taken in section on a greatly enlarged scale on line 12—12 of FIG. 13.

FIG. 13 is a view in horizontal section through a special form of air bar as it appears superimposed over a web which is shown in plan.

FIG. 14 is a fragmentary detail view diagrammatically showing in section a double faced dryer for a web floated therein by the incorporation of air bar structure in accordance with the invention.

FIG. 15 is an end elevation of the structure of FIG. 14, the web being shown in section.

FIG. 16 diagrammatically shows in side elevation a moving web floated between air bars so positioned as to deflect the web successively in opposite directions, thereby functioning as an accumulator to compensate for fluctuation in web movement.

The most significant uses of the invention appear to involve floating the web between air bars which are directly opposed as in FIGS. 3 to 7 and 14 and 15. However, individual air bars may be used either above or

beneath the web as exemplified in FIGS. 1, 2 and 16. In FIG. 16, the air bars are opposed, although not directly opposite. In FIGS. 8 and 9, 11, 12 and 13, it is contemplated that opposing pressure zones normally will be created by comparable opposed devices, although only one device is illustrated.

The preferred construction of an air bar 20 per FIGS. 3, 4 and 7 is as follows:

A box 22 serves as a plenum chamber supplied with air under pressure through a pipe 24. Each such box 22 preferably is elongated transversely of the web 30 to exceed the width of the web.

Extending continuously along the lower side margins of the box 22 are the nozzle slots 26, the length of which preferably exceeds the width of the web. The preferred nozzle construction is that shown in detail in FIG. 7. The flanges 28 of the side walls of box 22 are turned inwardly at approximately 45°. Extending between them in spaced relation to the work is a suppression plate 32 which defines a zone in which air under pressure acts on the web. As shown, this plate has upwardly and outwardly extending side flanges 34 which are spaced from the flanges 28 and from their free margins converge downwardly toward such flanges to define the nozzle slots 26.

The welds 36 or other means support the suppression plate 32. If the supporting means consist of welds, these are located at the rear or upper ends of the nozzles in positions such that the stream of air can re-establish its continuity before issuing from the nozzles. Any turbulence will result in loss of pressure in the pressure zone 40 between suppression plate 32 and web 30. For maximum benefit, the jets issuing from the nozzles should be continuous and as nearly as possible with uniform velocity throughout the width of web 30.

A very small percentage of the air entering the pressure zone 40 will escape from the ends of that zone across the side margins of the web 30. There is not sufficient clearance so that a very high percentage of the air can escape in this manner. Accordingly, the major portion of each jet is required to turn as indicated by the arrows at 42 and 44 so that most of the air entering the pressure zone issues from beneath the stabilizer bar in opposite directions along the face of the moving web 30. Change in direction of the momentum of the air jet is responsible for maintaing static pressure in zone 40. The mathematics will hereafter be explained.

It will, of course, be understood that while only one stabilizing bar is fragmentarily illustrated on a large scale in FIG. 7, this structure will normally be duplicated in an inverted position beneath the web as shown in FIGS. 3 to 6. Exceptions are shown in FIG. 1 and FIG. 2 and in FIG. 16 as later described.

Reference has been made to the fact that the nozzles direct the elongated jets of air substantially at 45° to the web. The angle is not critical. In general, the smaller the angle between the jet and the web, the greater will be the pressure developed in zone 40 and exerted on the web. However, it is more convenient structurally to use an angle of the approximate value of 45°. The reduction below maximum pressure is small.

I have measured the momentum of the jets flowing out of the elongated nozzles and have found that it can be expressed in the following terms:

$$MV=5.2P_oCD$$

where MV is the jet momentum in pounds for a one foot length of nozzle, C is the nozzle discharge coefficient, P_o is the pressure behind the nozzles in inches of water column, and D is the orifice width measured in feet. The forces resulting from a change in direction of momentum are vector quantities and are determined by the difference between the momentum vector of a jet as it leaves the nozzle and the momentum vector of the redirected jet. A momentum vector diagram is shown in FIG. 10 with the resultant vector forces in the horizontal and vertical directions.

I have found that the loss in momentum of the air entering and leaving the pressure zone is negligible. As a result, the two momentum vectors shown are for practical purposes both equal to the momentum of the jet leaving the nozzle. The resultant force normal to the web is, of course, resisted by the web.

The resultant forces parallel to the face of the web are of key interest. It is these forces that build up the pressure in the zone 40 and are resisted by the static pressure in that zone.

It is clear that this force acting along one linear foot of nozzle is:

$$F_x=MV(1+\text{Cos }\theta)$$

and that it is resisted by:

$$P_eY=F_x,$$

where P_e is the pressure in pounds per square foot in the space between jets, Y is the distance between the suppression plate and the web in feet, and F_x is the horizontal resultant force of the change in momentum of the jet.

If the above equations are combined to find the pressure on the web between jets, I find that:

$$P_e=\frac{5.2P_oCD(1+\cos\theta)}{Y}$$

The pressure P_e acts on the web within the area between jets so the force on the web is:

$$F_w=5.2P_oCD(1+\cos\theta)\frac{L}{Y}$$

Where F_w is the force in pounds per foot of web width, L is the length of the pressure zone as measured by the distance between jets in feet, and the other quantities are as previously defined.

In addition to the force F_w the vertical resultant vector of each of the two jets is acting on the web, but they are minor forces (usually under 10% of the total in magnitude) and are unaffected by distance of the web from the air bar. The formula therefore describes most of the design criteria for the preferred embodiments of my invention. Similar formulae can be provided for the other embodiments hereinafter disclosed.

As shown by the formulae, the scale or size of the device can be altered considerably without changing the effect. Increased pressure on the web can be secured by increasing the pressure of the air delivered into the plenum chamber, or by increasing the width of the orifice, the objective being in both instances to increase the amount of air flowing through the nozzles. The force on the web may also be increased by increasing the spacing between nozzles, thereby increasing the area of the web exposed to the pressure zone 40. There is a practical limit here in that, if the spacing becomes too large, the total cross section of the open ends of this space results in excessive loss of pressure.

Pressure on the web may further be increased by reducing the distance between the suppression plate 32 and the web. This is limited by practical considerations such as the necessity of dealing with irregularities in the web. However, as little as 3/16 inch spacing has been used successfully on paper webs.

Dimension Y should be kept as small as is practicable. As an absolute minimum, it should be somewhat larger than the nozzle orifice width D, to allow space for the jet of air to change direction and flow out of the suppression area. Experimentation indicates that the minimum dimension Y should be about twice D.

The maximum value of Y is a value at which loss of air by lateral flow across the web is still controlled. For example, in the test equipment, 0.030" nozzles spaced two inches apart were very satisfactory at a distance of 3/16 inch from the web, but began to lose control

at 0.030" from the web. It is believed, therefore, that the product of L times Y should be less than 20 times D, provided, however, that L must always be as great as Y. Accordingly, it may be said that the square of Y must be less than 20 times D.

Finally, the pressure in zone 40 may be increased by reducing the angle theta to zero as a limit. Practical considerations make it desirable to use an angle theta of approximately 45° and the advantage of reducing the angle to zero is only about 17%. If theta is greater than 90° (in other words, if the jets are divergent rather than being convergent toward the work) the cosine of the angle becomes negative with considerable loss.

The most interesting factor demonstrated by the formula is the spring effect. A given construction of my apparatus is fixed in all dimensions except Y. Clearly, if the web moves away from the air bar so that Y increases, the force on the web drops in inverse proportion. The reverse is equally true. Therefore, the action is similar to that of a compression spring. When a web is transported between two of my air bars, the effect is similar to having opposed compressing springs on opposite sides of the web. The positioning force is quite strong. If the webs handled have considerable weight (most webs have insignificant weight), periodic vibration can occur and must be eliminated by proper design.

It is possible to admit additional air to the pressure space over the web through holes in the suppressor plate. This will force more air to flow out of the pressure zone between the plate and the work and thus add to the horizontal momentum vector only. Increased pressure on the web will result, but it is much more effective if the conventional jets are increased in size, thereby increasing both momentum vectors.

The basic method of transporting a web using the preferred arrangement is to simply mount air bar units on both sides of the web in opposition to each other. Air is supplied at preferably equal pressure to both units and the web is positioned at a level midway between the units because in that position the pressure on each side of the web is equal. The pressure supplied to the units does not need to be exactly equal because the pressure on the web is a function of distance Y as well as P_0. Consequently, if more pressure is supplied to the top unit than to the bottom, the pressure above the web is greater than that below, and the web adjusts downward (which decreases the pressure above and increases the pressure below) until the pressures are balanced. This effect is more important if webs of significant weight are to be transported. In this case, higher pressure or a larger unit can be employed below the web to offset the force of gravity on the web.

As will be apparent from the foregoing, webs of widely differing weight can be positioned by use of air bars in accordance with this invention. Filmy tissue paper, or films of synthetic resin, can be held positively in a desired plane and the same is equally true of any other flexible web such as webs of heavy paper, cardboard, or sheet metal. Despite the very substantial force exerted on the web by the air in the pressure zone, damage to the work, or to coating or printing on the work surface, does not result because the invention uses primarily the static pressure over large areas rather than the kinetic energy of the jets as such.

When flexible webs are being transported, a certain amount of web tension is necessary. The flow of the redirected jets causes lift on the area of the web over which they flow, and the web tends to rise or drop on each side of the air bar. The lift forces are easily overcome by a small web tension. In practice a tension of ¼ pound per inch of web width has been successful. This is not a serious limitation, however, since most webs are transported with much more tension. For example, in offset presses the web is commonly subject to four to six pounds of tension and in paper machines the web is commonly subject to one to two pounds of tension per inch of web width.

Wrinkles in web direction are often a problem in handling flexible webs. Paper sometimes becomes wrinkled in storage and is rejected for printing purposes because of the wrinkles. Practice of the present invention tends to force wrinkles flat as shown by the detail in FIG. 5. The view is taken looking in the direction of movement of the web 30. The wrinkle 46 extends longitudinally of the web. The upward convexity of the wrinkle brings it closer to the suppression plate 32 of the upper air bar 20, thereby increasing the pressure above the wrinkle. The same convexity removes it farther from the suppression plate 32 of the lower air bar, thus decreasing the pressure below the wrinkle. In consequence, the pressure differential across the wrinkle causes the material to tend to be restored to the plane of the rest of the web.

Another problem with flexible webs concerns the tendency of edge margins to curl. FIG. 6 shows by means of the arrows at 48 and 50 the flow of air from the pressure zones 40 respectively above and below the web 30. The arrows 48 and 50 converge across the free side margin 52 of web 30. The flow is quite rapid since there is zero pressure just outside the web. The edge 52 of the web is held in the desired plane by strong resilient pressures exerted by the converging stream lines of air flow. The flow of air also exerts a slight frictional drag outwardly which further tends to spread and flatten the web. The flattening effect is so pronounced that if an operator reaches between the spaced ends of the air bars 20 and intentionally deflects the web margin 52 it will snap resiliently but strongly back to horizontal position.

The matter of holding a web tightly to a drum such as the steam cylinder 54 of a dryer has long presented problems. The web 30 moving toward the drum in the direction indicated by arrow 56 in FIG. 2 entrains air and traps this air between the web and the cylinder, thereby greatly reducing the transfer of heat. Attempts have been made to expel this air by jets directed onto the surface of the web in the direction of the roll 54 but the lift effect of the redirected jets is sufficiently great so that it tends to nullify the pressure exerted by the jets.

By using an air bar 20 constructed as above described and positioned above the line upon which the web is tangent to the drum 54, as shown in FIG. 1 and FIG. 2, I am able to hold the web very tightly against the cylinder, the pressure exerted over the relatively large area of the pressure zone 40 being so much g ater than the lift effect of the redirected jets that the latter ceases to be of any consequence.

A major use of the invention is to float and position a moving web as it passes through a dryer so that both sides of the web can be dried concurrently. This is not merely advantageous when both sides have been coated or printed. It is also advantageous whether the drying problem involves two surfaces or one surface or the body of the web. The full potential of high velocity air drying is exerted on both sides of the web at the same time. I prefer that the opposed air bars be disposed in pairs at intervals of about one and one-half feet between centers along the path of the web. The spacing is not critical. Greater spacing may be used if the web is not subject to much disturbance, or is stiff. If the web is extremely filmy, as in the case of cellophane one-half mil thick, I use air bars in pairs spaced one and one-quarter feet on center.

For drying purposes, I prefer to use the structure of FIGS. 13 and 14 which combines the air bars of the present invention with drying nozzles as disclosed in my companion application Ser. No. 80,610, filed Jan. 4, 1961, now Patent No. 3,176,412. The web 30 passes through upper and lower housings 60 and 62 each of which provides a plenum chamber 64 that supplies air both for drying and positioning the web 30. Nozzles 66 conduct the drying air in opposite directions against the opposite faces

of the web 30, being directed substantially at right angles upon the web as taught in said companion application. The spaces 68 between nozzles are vents and as many nozzles and intervening vent spaces will be used as can be accommodated between the points of positioning support which, as above noted, will normally be approximately one and one-half feet apart in the direction of web movement.

Opposing each other and provided with air from the plenum chamber 64 are the pairs of convergent nozzles 26 and the intervening suppression plates 32 to provide the pressure zones which floatingly position the web between the drying nozzles. These function as already described. However, their proper functioning inherently requires that the air escape in opposite direction along the surface of the web, whereby the momentum resulting from change in direction will maintain web positioning pressure in the pressure zone. Because the air escaping from this zone would interfere with the desired action of the drying jets 66, if not counteracted, I prefer to make the drying jets 660 which are closest to the air bars oppositely convergent toward the positioning jets as shown in FIG. 14, thus intercepting the air escaping from the positioning jets and neutralizing its movement along the web before such air passes beneath the remaining drying nozzles.

It will be apparent that considerable drying effect is attributable to the air used in positioning or stabilizing the web. It appears that for every positioning bar introduced into the dryer, the loss in drying effect is no greater than the loss of a single nozzle. This is insignificant compared to the advantages.

It is calculated that a paper mill dryer of seventy cylinders requiring some 200 lineal feet of space can be replaced by a dryer of the type shown in FIG. 13 and FIG. 14 which has a total length of only seventy feet.

In the case of drying both sides of a printed web, the saving is even more spectacular. I have used a web positioning and drying means as herein disclosed to dry ink printed on both sides of a web running at 1000 feet per minute, the over-all length of the dryer according to the present invention being only 4.2 feet as compared with fifteen to twenty feet required for the same work in competitive dryers. In addition to the speed of drying, the dryer of the present invention handles without offset a paper web freshly printed on both sides, because the instant invention makes unnecessary any physical contact with the freshly printed surfaces, the web being positioned with great accuracy between the closely proximate drying air nozzles without using any rolls or other physical guides for the purpose.

In the arrangement shown in FIG. 11, the openings 80 of the nozzles 82 are directed at right angles to the web 30 and arranged on both sides of the heavy bars 323 which serve as suppression plates and have beveled side surfaces 84. The streams of air issuing from the nozzles are normal to the work as indicated by the arrows 86 and each divides when it impinges upon the work. The components which move toward the suppression plates as indicated by arrows 88 pressurize the spaces 403 beneath these plates 323, the air then escaping upwardly and outwardly along the beveled surfaces 84 as indicated by the arrows 90.

In the construction shown in FIGS. 12 and 13, the plenum 24 has its bottom wall 92 provided at spaced intervals with symmetrically disposed openings at 94 staggered in plural rows. The openings are bordered by beveled surfaces 284 which coact with complementary beveled surfaces 344 of respective plugs 324, each of which acts as a suppression plate. The surfaces 284 and 344 converge downwardly throughout the perimeter of the suppression plate plug 324 to define continuous nozzle slots 264 in the manner clearly shown in FIG. 12. Since each slot is continuous and unbroken throughout the extent of the suppression plate, the air jet issuing therefrom confines air in the pressurized zone 404. It will be observed in FIG. 13 that the distribution of the annular nozzles and suppression plates is such that the combined effect thereof extends substantially completely across the web 30.

The construction of FIG. 8 differs from the preferred construction of FIG. 7 only in the provision of nozzle walls at 340 which are not a part of the suppression plate 320, the latter being independently supported in any desired manner, as by a suspending post at 70. The suppression plate 320 is therefore not necessarily a part of the plenum chamber, being spaced from the respective nozzles. Because the nozzles are independent thereof, the plate preferably has cylindrically rounded margins 72, the jets being directed tangentially respecting the margins 72 as indicated by the arrows 42 and 44.

In the construction of FIG. 9, the nozzle openings are defined by slots 261 between the walls 281 and 341, the direction of the jets being such that they impinge at acute angles directly on the upper surface of the work 30 as indicated by the arrows 421 and 441. The pressure in the zone between the web 30 and the lower surface of the suppression plate 321 builds up in the same manner above described, and the air escapes through the openings 74 between the suppression plate and the respective nozzles.

In the construction shown in FIG. 16, the web 30 moves from left to right through the press cylinders 98. The air bars 20 are placed at opposite sides of the web and are not only offset from each other in the direction of web travel but, as will be noted, they are offset across the plane in which the web would otherwise move from the cylinders 98. As a result, the web changes direction at 100 and 102 with somewhat the same effect as if it were passing around resiliently yieldable pulleys instead of passing the air bars 20. However, there are at least two noteworthy differences in that the web does not touch any solid surface and consequently printing or coating thereon will not be damaged even if both sides of the web are printed or coated. In the second place, since the air bars 20 provide resiliently yielding support without the inertia of mass, any increase or decrease in the tension of the web is instantly absorbed where the web changes direction at 100 and 102, thus providing the effect of an inertia-free accumulator. As soon as normal tension is restored, the web will automatically find its original position with respect to the air bars, whether the deflection has been away from or toward the air bars in response to the change in tension.

The air bars can be used for positioning a web which does not need to be dried but requires only to be conveyed over almost any distance. By simply using opposed air bars at suitable intervals along the path of the conveyor, the web will be firmly supported throughout its entire length and since the drag of the air bar is negligible, the web will have substantially constant tension throughout its length. This is not possible with roll supports because, if the web itself is relied upon to rotate the rolls this will require power, and, if the rolls are power-actuated otherwise, it is impossible to regulate the roll speeds so closely that tension variations do not occur.

Generically, the method of operation in all of the embodiments herein disclosed involves subjecting a moving web to pneumatic pressure exerted over a substantial area in which the pressure is uniform at all corresponding points longitudinally of the web. In many embodiments of the invention, the generic concept further contemplates progressive diminution of pressure toward the side margins of the web. The generic concept further contemplates that the pneumatic pressure to which the moving web is exposed shall be developed in a pressure zone into which are directed opposing jets of gas substantially continuous along opposite sides of the zone, the jets of gas escaping only after abrupt change of direction which establishes the desired static pressure as a function of

the momentum of the gas. While the kinetic energy of the gas develops the pressure, it will be observed that the surfaces of the web are exposed to very little kinetic energy of the respective jets, the desired effect being achieved by building up the pressure in zones of substantial area.

Subgenerically, the procedure involves the concept of opposing static pressure zones to which opposite faces of the moving web are exposed and between which zones the moving web is floated, any deviation from a balanced intermediate position resulting in a decrease in the pressure exerted by the gas of one zone and an increase in the other thereby restoring the web to a position in which the pressures are balanced. Particularly in regard to this subgeneric concept it is important that air be permitted to escape laterally of the web from both opposing zones. The movement of air outwardly across the margins of the web has an important effect in smoothing the ruffles and other irregularities of the web margins and stretching the margins to hold the web flat in the areas in which the zones are effective.

While all of the air introduced into the pressure zone is normally required to escape by abrupt change in direction, nevertheless there are situations in which a part of the air of the pressure zone is advantageously allowed to escape through a porous web, thus ventilating such a web. An example of the utility of this arrangement is found in the drying of water of solvents from a web, such as a paper making felt. If, for example, any one of the devices shown in FIGS. 7 to 9 or 11 to 14 is used on one side of the web only instead of being duplicated on the other side in accordance with the above described practice when the web is to be floated in an accurately predetermined position, a situation will be created in which the static pressure in the pressure zone to which the web is exposed can be used to force some of the gas in the zone through the material of the web if the web is porous. The same will obviously be true of the arrangement diagrammatically illustrated in FIG. 16, where the two air pressure bars are not directly opposite each other.

Inasmuch as the web normally has less width than the lateral extent of the opposed pressurized zones by which the web is positioned, it is entirely practicable to operate a plurality of webs side by side between the pressurized web positioned zones of opposed air bars.

I claim:

1. Means for positioning a moving web by subjecting a transverse zone spanning the web to uniform static pressure, said positioning means comprising a suppression plate extending transversely across said web and spaced therefrom as closely as is mechanically practicable, nozzle means no closer to the web than said plate and having slots which extend substantially continuously across said web and are spaced at opposite sides of said plate, the minimum spacing between the web and said plate being a distance at least approximately twice as great as the nozzle slot width, the maximum spacing of the plate from the web never being greater than the width of the plate, the product of the width of the plate and the spacing of the plate from the web being less than twenty times the nozzle slot width, and means for discharging gas under pressure through the nozzle slots for defining a zone of static pressure between the plate and the web.

2. A device according to claim 1 in which a surface on the other side of the web from said plate comprises a roll on which the other face of the web is supported, said static pressure serving to hold the web in intimate contact with the roll.

3. Web positioning means according to claim 1 in which both the plate and the nozzle slots extend laterally beyond the side margins of the web, escape of gas laterally of the web holding the web margins laterally tensioned and flat.

4. Web positioning means according to claim 1 in which the nozzle slots are so positioned angularly as to direct opposing jets of gas convergingly toward the web and into the space between the web and the plate, such space providing clearance for change in direction of the gas of said jets to move in opposite directions from a zone of static superatmospheric pressure established by the jets between the plate and the web.

5. Web positioning means according to claim 4 in which the nozzle slot positions direct the jets at angles of approximately forty-five degrees to said web.

6. Web positioning means according to claim 1 and comprising a set of air bars disposed at opposite sides of the moving web, said bars having opposed duplicate positioning structure as defined in claim 1.

7. Web positioning means according to claim 6 in which the suppression plates and nozzle slots of both bars extend beyond the side margins of the web, escape of gas from both faces of the web in directions laterally thereof holding the web margins laterally tensioned and flat.

8. Web positioning means according to claim 1 comprising air bars offset longitudinally of the web, each bar comprising positioning structure as defined in claim 1, the offset of said bars being sufficient to effect deflection of the web in passing the bars successively.

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No. 83-2028

IN THE
SUPREME COURT OF THE UNITED STATES
OCTOBER TERM 1983

THOMAS A. GARDNER,

Petitioner,

vs.

TEC SYSTEMS, INC.,
a Wisconsin corporation,
ROY E. DOWNHAM, JACK ECKELAERT
and JOHN W. FROST,

Respondents.

ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF FOR RESPONDENTS

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STATUTES INVOLVED

35 U.S.C. § 103. Conditions for patentability; non-obvious subject matter

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. . . .

35 U.S.C. § 282. Presumption of validity; defenses

> A patent shall be presumed valid. . . .The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.
>
> The following shall be defenses in any action involving the validity or infringement of a patent and shall be pleaded:
>
> . . .
>
> (2) Invalidity of the patent or any claim in suit on any ground specified in part II of this title as a condition for patentability,
>
> . . .

Federal Rules of Evidence, Rule 301. Presumptions in General in Civil Actions and Proceedings

> In all civil actions and proceedings not otherwise provided for by Act of Congress or by these rules, a presumption imposes on the party against whom it is directed the burden of going forward with evidence to rebut or meet the presumption, but does not shift to such party the burden of proof in the sense of the risk of nonpersuasion, which remains throughout the trial upon the party on whom it was originally cast.

STATEMENT OF THE CASE

Since the determination of this Petition for Certiorari does not require review of the factual merits, respondent omits a recitation of the facts established at trial and incorporates by reference the concurrent findings of the District Court and the Court of Appeals for the Federal Circuit for its statement of the facts of this case. In passing, however, respondent notes that petitioner not only asserts as facts that which have twice been found against him, but strays beyond the record to include assertions for which there is no record evidence.

The only cognizable issue asserted by petitioner is whether or not he received the benefit of the presumption of validity of his patent, which is provided by 35 U.S.C. 282. Determination of that question requires, not a review of the evidentiary record below, but an examination of what the courts below did.

This case was tried to the Court, beginning January 19, 1976, and the trial consumed a total of 24 days producing 3,589 pages of transcript and numerous exhibits. No time limitations were imposed upon the parties at trial. Nor did the Trial Court limit the number of witnesses the parties could call, or exhibits and amount of demonstrative evidence they could offer. In all, ten different persons testified, four for the plaintiff-petitioner and six for the defendant-respondent.

The plaintiff-petitioner offered himself as his only expert, and relied upon his own extended testimony and the presumption of validity of his patent for the burden of his case. The defendants

called as witnesses, two individual defendants, two former employees of plaintiff's licensee, Overly, Inc., an employee of one of Overly, Inc.'s customers, R. R. Donnelly Printing Company, and the expert, Dr. Daane. Defendants qualified as experts Messrs. Downham, Eckelaert and Daane, as well as the two former employees of plaintiff's exclusive licensee. The defendants also presented demonstrations of working models and motion pictures of tests conducted outside of court. The parties filed extensive pretrial briefs, post-trial briefs and proposed findings of fact and conclusions of law.

The trial Court rendered its decision in the form of a 45-page "Memorandum and Order" which included 102 findings of fact and conclusions of law, following a page-and-a-half statement of the case, and entered judgment holding petitioner's patent invalid for obviousness under 35 U.S.C. 103. Plaintiff-petitioner filed a number of post-trial motions, including motions for a new trial and motions to alter and amend the judgment, and the Court denied those motions in a 15-page "Decision and Order," in which it reviewed and reaffirmed its essential findings and conclusions.

It is not disputed that the District Court made a thorough and meticulous analysis of the invention claimed in the patent and the teachings of the prior art. Nor is it disputed that the District Court accurately applied the analysis promulgated by this Court in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 15 L. Ed. 2d 545, 556, 86 Sup. Ct. 684 (1966). Petitioner complains only of the results of that analysis, and of the facts found by the District Court and affirmed on appeal.

On appeal to the Court of Appeals for the Federal Circuit, plaintiff-appellant asked that Court, as he asks this Court, to find that the District Court had erred "in ignoring the presumption of validity of the patent in suit . . ." The Court of Appeals for the Federal Circuit devoted the largest part of its opinion to a careful, detailed and explicit analysis and resolution of that issue. In doing so, the Court of Appeals not only reviewed in complete detail the decision of the District Court, but also all of the evidence of record, and on the basis of its analysis affirmed the District Court.

After describing the *Graham v. John Deere* analysis, the Court of Appeals stated the issue to be determined under 35 U.S.C. 103, recast it in terms of the facts of the case, and added:

> By virtue of the *statutory presumption of validity,* 35 USC 282, it was up to TEC, the party asserting invalidity, to prove facts which would permit the trial court to answer this question in the affirmative. (Italics added)

725 F.2d at 1345, A 15.

The Court of Appeals next described the weight of the burden on TEC as follows:

> As for the *standard of proof TEC* had to meet to prove it, we note that the claims were allowed over Vits, and that no reference shows more than does Vits. It is thus perfectly clear that TEC in effect asked the trial court to cover precisely the same ground as that covered by the PTO in its quasi-judicial determination of patentability that it is authorized and required by statute to render. Therefore, *TEC's burden on this point was a heavy one.*
>
> Bearing the foregoing in mind, we arrive at the nub of this case. If we are to agree with the trial court, we must have from it a finding supported by the record that TEC proved by *clear and convincing evidence* that a Gardner air bar coming within the claims of the '447 patent is not in any significant respect different from similar devices available in the prior art because structural differences over the prior art do not necessarily result in differences in performance over the prior art. Since there is no express finding to this effect, we scrutinize the court's opinion to see whether we can infer such a finding from all that is said therein. (Italics added)

725 F.2d at 1345, A 16.

Based upon its detailed scrutiny of the District Court's findings and conclusions, the Court of Appeals concluded as follows:

> Although it never said so in precise terms, the trial court was unquestionably of the firm conviction that the proofs adduced at trial showed *clearly and convincingly* that the dimensional limitations of claim 1 failed to particularly point out a feature of an air bar which performed any differently from prior art bars, in other words, that those limitations are a verbal difference only. (Italics added)

725 F.2d at 1346, A 18.

The Court of Appeals then stated the issue presented to it for determination as follows:

> The opinion of the trial court, as well as the arguments of Gardner himself, make clear that resolution of this case turned at least partially on testimony given and exhibits displayed at trial. Accordingly, we apply the clearly erroneous standard. Was the trial court clearly erroneous in its conviction that the proofs adduced at trial showed *clearly and convincingly* that the dimensional limitations of claim 1 made no significant difference in the operation of an air bar? (Italics added)

725 F.2d at 1347, A 19.

After reviewing all of the evidence of record, and arguments presented by the parties, the Court of Appeals for the Federal circuit held as follows:

> The trial court would not have been clearly erroneous in concluding that the dimensional limitations did not specify a device which performed and operated any differently from the prior art. Its decision therefore stands.

725 F.2d at 1349, A 23.

ARGUMENT

The Petition for Certiorari should be denied because none of the reasons for granting the petition set forth in Rule 17, or otherwise supporting its grant are present. There can be no considerations involving state court decisions because this is an action arising under Title 35 of the U.S. Code, jurisdiction over which resides exclusively in the federal courts. There is no conflict between the decision of the Court of Appeals for the Federal Circuit and that of any other court of appeals. There is no departure by the Court of Appeals from any accepted or usual course of judicial proceeding, nor did the Court of Appeals sanction any such departure by a lower court, such as to call for an exercise of this Court's power of supervision.

Thus, petitioner can only contend that the Court of Appeals for the Federal Circuit has decided an important question of federal law which has not been, but should be, settled by this Court, or has decided a federal question in a way in conflict with applicable decisions of this Court. In making such an argument, he is demonstrably wrong.

The Court of Appeals for the Federal Circuit expressly addressed the same contention which petitioner makes here, i.e., that he had ". . . not been accorded the benefit of the presumption of validity." (Pet. 18) The Court of Appeals made a "full and independent review" of the District Court's conclusion, 725 F.2d at 1344, A 13, and a "painstaking review of the opinion of the trial court and the briefs on appeal", 725 F.2d at 1345, A 14. After reviewing the entire record and summarizing the "salient evidence introduced at trial", 725 F.2d at 1347, A 19, the Court of Appeals concluded, "Having surveyed all of the above-mentioned evidence, as well as other evidence cited to us by the parties, we are not 'left with the definite and firm conviction that a mistake has been committed.' *United States v. United States Gypsum Co.*, 333 U.S. 364, 395, 68 S.Ct. 525, 541, 92 L.Ed. 746 (1948)."

Petitioner's protracted rearguments of the evidence of record coupled with his failure to specify any legal error in the lower

courts' analysis, and his superficial and preemptory treatment of the law pertaining to presumptions belies his contention that he asks this Court to review the law of presumption. The petition makes it appear as though his real purpose is to obtain this Court's review of the concurrent findings of the lower courts on the record evidence. However, this Court does not grant Petitions for Certiorari to review evidence and discuss specific facts. *United States v. Johnston,* 268 U.S. 220, 227. As this Court observed in another patent case, "A court of law, such as this court is, rather than a court for correction of errors in fact finding, cannot undertake to review concurrent findings of fact by two courts below in the absence of very obvious and exceptional showing of error. . . . [authorities] . . ." *Graver Tank & Mfg. Co. v. Linde Air Prod. Co.,* 336 U.S. 271, 276, 93 L. Ed. 672-677 (1949). A careful review of the presumption of patent validity as construed and applied by the Court of Appeals for the Federal Circuit demonstrates that there is no occasion for this Court's review.

The Court of Appeals' construction of the statutory presumption of validity, and the levels of proof required, appears in a succession of consistent decisions that are based squarely on the patent statute, the Federal Rules of Evidence and the decisions of this Court. The predecessor of the Court of Appeals for the Federal Circuit, the United States Court of Customs and Patent Appeals (hereafter "CCPA"), provided a thorough analysis of the presumption of validity in its seminal decision in *Solder Removal Company v. ITC,* 582 F.2d 628 (1978).

In the *Solder Removal* case, the CCPA affirmed the ITC's decision that the patent in issue was invalid for failure to satisfy the condition of patentability in 35 U.S.C. 103. In doing so, the CCPA construed Rule 301 of the Federal Rules of Evidence in light of 35 U.S.C. 282, and held as follows:

> Rebuttal of the presumption may be more easily and more often achieved in reliance on prior art more pertinent than that considered by the examiner; but whether rebuttal is achieved requires careful consideration of whether the prior art relied upon does in truth render

> the claimed invention anticipated or obvious. Until that question is answered in the affirmative, the presumption is not rebutted and continues alive and well.
>
> The first sentence of § 282, that "[a] patent shall be presumed valid," must be read in the context of the remainder of the first paragraph of § 282, which provides that the party asserting invalidity bears the burden of establishing it. Section 282 thus mandates not only a presumption shifting the burden of going forward in a purely procedural sense, but also places the burden of persuasion on the party who asserts that the patent is invalid. To speak of the presumption as "no longer attaching" is to risk a concomitant, and unspoken, assumption that the burden of persuasion is thereafter no longer upon him who asserts invalidity. That view is contrary to the meaning of § 282, for the burden of persuasion is and remains always upon the party asserting invalidity, whether the most pertinent prior art was or was not considered by the examiner.

582 F.2d at 632-633.

The CCPA in *Solder Removal* also addressed a contention that petitioner here raises, ruling as follows:

> The statute does not make the presumption applicable in some situations and not in others. . . .
>
> Though the presumption of validity remains in existence until rebutted and the burden of persuasion continues throughout the litigation on him who asserts invalidity, the burden of persuasion may be more easily carried by evidence consisting of more pertinent prior art than that considered by the examiner.

582 F.2d at 633.

The CCPA in *Solder Removal* also disposed of another error, which petitioner attempts to resurrect here (Pet. 24-5), stating in footnote 10:

> Application of § 282 in its entirety has suffered from analogy of the presumption itself to the deference due administrative agencies.

582 F.2d at 633.

The Court of Appeals for the Federal Circuit adopted the *Solder Removal* analysis of 35 U.S.C. 282 in *Aktiebolaget Karlstads Mekaniska Werkstad and KMW-Johnson, Inc. v. ITC*, 705 F.2d 1565, 1577 (1983). In *SSIH Equipment S.A. v. ITC*, 718 F.2d 365, 375 (1983), the Court of Appeals for the Federal Circuit applied the *Solder Removal Co. v. ITC* analysis, and added to it, "The presumption of validity afforded by 35 U.S.C. § 282 does not have independent evidentiary value." 718 F.2d at 375. Petitioner has singled out that interpretation of the presumption, seemingly to suggest that it is somehow in error (Pet. 28).

However, if that is petitioner's purpose, petitioner assumes the burden of repealing the clear mandate of Congress and reversing the premise of this Court's adoption of the Federal Rules of Evidence. The Notes of the Advisory Committee on Proposed Rules as to Federal Rule 301, describe a presumption in civil actions as originally proposed and approved by this Court* as follows:

> Presumptions governed by this rule are given the effect of placing upon the opposing party the burden of establishing the nonexistence of the presumed fact, once

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*Rule 301. Presumptions in General. In all cases not otherwise provided for by Act of Congress or by these rules a presumption imposes on a party against whom it is directed the burden of proving that the nonexistence of the presumed fact is more probable than its existence.

> the party invoking the presumption establishes the basic facts giving rise to it. The same considerations of fairness, policy, and probability which dictate the allocation of the burden of the various elements of a case as between the prima facie case of a plaintiff and affirmative defenses also underlie the creation of presumptions. These considerations are not satisfied by giving a lesser effect to presumptions. . . . [authorities] . . .
>
> The so-called "bursting bubble" theory, under which a presumption vanishes upon the introduction of evidence which would support a finding of the nonexistence of the presumed fact, even though not believed, is rejected as according presumptions too "slight and evanescent" an effect. . . . [authority]. . .

The Notes of Committee on the Judiciary, House Report No. 93-650, reveal that the House sought to treat presumptions as evidence, as follows:

> With respect to the weight to be given a presumption in a civil case, the Committee agreed with the judgement implicit in the Court's version that the so-called "bursting bubble" theory of presumptions, whereby a presumption vanished upon the appearance of any contradicting evidence by the other party, gives to presumptions too slight an effect. On the other hand, the Committee believed that the Rule proposed by the Court, whereby a presumption permanently alters the burden of persuasion, no matter how much contradicting evidence is introduced — a view shared by only a few courts — lends too great a force to presumptions. Accordingly, the Committee amended the Rule to adopt an intermediate position under which a presumption does not vanish upon the introduction of contradicting evidence, and does not change the burden of persuasion; instead it is merely deemed sufficient evidence of the fact presumed, to be considered by the jury or other finder of fact.

The Senate Committee disagreed with the House Committee, stating in the Notes of Committee on the Judiciary, Senate Report No. 93-1277 as follows:

> The effect of the amendment is that presumptions are to be treated as evidence.
>
> The committee feels the House amendment is ill-advised. As the joint committee (the Standing Committee on Practice and Procedure of the Judicial Conference and the Advisory Committee on the Rules of Evidence) stated: "Presumptions are not evidence, but ways of dealing with evidence." . . .
>
> . . .
>
> For these reasons the committee has deleted that provision of the House-passed rule that treats presumptions as evidence.

The Notes of Conference Committee, House Report No. 93-1597, after discussing the two versions, reports that, "The Conference adopts the Senate amendment." The Court of Appeals for the Federal Circuit simply follows that clear mandate.

In *SSIH Equipment SA v. ITC*, 718 F.2d 365, 379-381, the Court of Appeals also defined the standard of proof required to rebut the presumption of validity as "clear and convincing evidence." In doing so, the Court of Appeals expressly adopted this Court's analysis stated in *Addington v. Texas*, 441 U.S. 418, quoting from pp. 423-25 of that decision at 718 F.2d 380-81.

In *Kalman v. Kimberly-Clark Corporation*, 713 F.2d 760, 773 (1983), the Court of Appeals for the Federal Circuit corrected the lower court's statement that by 35 U.S.C. 282, Congress had "shifted" the burden of proof to the party challenging validity, by stating that 35 U.S.C. 282 ". . . places it there and there it stays," reiterating the statement of the presumption of validity in *Solder Removal Co. v. ITC*, 582 F.2d 628, 632-633 (1978), and citing also *Chicago Rawhide Mfg. Co. v. Crane Packing Co.*,

523 F.2d 452, 457 (7th Cir. 1975). The Court of Appeals again applied its *Solder Removal Co. v. ITC* and *SSIH Equipment S.A. v. ITC* analysis of the presumption of validity in *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530 at 1534, (which petitioner quotes, Pet. 29). The Court of Appeals for the Federal Circuit also consistently applies the same analysis in *Hughes Aircraft Co. v. United States*, 717 F.2d 1351 at 359, and in *American Hoist & Derrick Company v. Sowa & Sons, Inc.*, 725 F.2d 1350 (1984), which was handed down on the same date as the decision in this case, and in this case.

Shortly before the Court of Appeals for the Federal Circuit was created, the Fourth Circuit Court of Appeals independently developed precisely the same construction of the 35 U.S.C. § 282 presumption of validity in *Tenneco Chemicals, Inc. v. William T. Burnett & Co., Inc.*, 691 F.2d 658, 663-664 (4th Cir. 1982).

Petitioner seems oblivious of the fact that the words "presumption" and "presumed" have become technical words of art, incorporating more than a century of judicial experience and wisdom, an enormous amount of scholarship, and numerous codifications and recodifications, which culminated in Rule 301 of the Federal Rules of Evidence*. As evidenced by the Committee reports, Congress was well aware of and relied upon that law in enacting the Federal Rules of Evidence.

Also to suggest, as petitioner does (Pet. 21), that there was no legislative antecedent for the presumption of validity in 35 U.S.C. 282 is not entirely accurate. In this portion of the 1952 patent act, Congress reconciled the patent statutes with the Federal Rules of Civil Procedure. In old 35 U.S.C. 67, R.S. § 4919, the patent statute had provided that a patentee would have an action in the nature of trespass on the case for infringement, and this was replaced in 1952 by 35 U.S.C. 281 which states that, "A patentee shall have a remedy by civil action for infringement of his patent." Thus, where the following section of the old statute,

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*See 9 Wigmore, Evidence §§ 2483-2493 (Chadbourn rev. 1981).

35 U.S.C. 69 R.S. 4920, provided the defendant "may plead the general issue, and . . . may prove . . . special matters . . ." as affirmative defenses, Congress in 1952 substituted 35 U.S.C. 282, which provides that, "A patent shall be presumed valid. . . . [etc.] . . . The following shall be defenses . . . [etc.] . . ." In short, the old statute, like the current 35 U.S.C. 282, expressly placed the burden of proving invalidity upon the defendant, but the modern version, 35 U.S.C. 282, by using "presumption" terminology, is more precise and definitive.

Petitioner asks this Court to exempt patent cases from the Rules of Evidence, and to evade the intent of 35 U.S.C. § 282 by giving the word "presumed" a common dictionary meaning, instead of treating it as a word of art. By this device, petitioner would have this Court, in patent cases, wipe out a century or more of judicial experience and wisdom, and scholarly and codifying efforts, and start from the beginning, not with one relatively clear rule, but the six subjective and novel rules that petitioner proposes (Pet. 33-34). Petitioner would leave the law of evidence in shambles just to validate his patent, which two courts have held should never have been issued. In all other patent cases, according to petitioner's proposal, the courts would need to repeat that century or more of experience accumulated in developing the existing law of presumptions, not only once, but six times, and that would only define the presumption in cases analogous to this one. As for cases where the prior art at trial differs from that considered by the examiner in issuing the patent in suit, presumably petitioner would want a different set of rules, but he is silent as to that.

Petitioner cites no precedent for the relief he seeks. Petitioner points to no authority in the statute or elsewhere to support this Court's embarking on such a legislative excursion. Petitioner cannot even provide a rational basis for his extraordinary request.

The cornerstone of petitioner's demand is his charge, which he made in his brief on appeal as well as this petition, that courts in general, and particularly the courts that held his patent invalid, lack the intellectual capacity to comprehend "scientific principals" (Pet. 31, 34) involved in patent cases, the latter courts apparently having suffered from petitioner's instruction. That startling argu-

ment coupled with petitioner's apparent failure to apprehend the procedural and evidentiary meaning of "presumption" brings to mind Henry David Thoreau's observation that, "Sometimes we are inclined to class those who are once-and-a-half witted with the half-witted, because we appreciate only a third part of their wit."*

The truth is that Patent Examiners, whose decisions, according to petitioner, the courts are not competent to review, are not recruited on Mt. Olympus, but from the same fallible human race as lawyers, judges and inventors. In this age of science and technology, the courts of necessity deal with "scientific principals" everywhere human conduct encounters science and technology, and its concrete embodiments and consequences. There is no reason for treating patent property rights differently from other encounters. Incidentally, if there be "scientific principals" or inventions that transcend human understanding, petitioner's invention is not among them.

CONCLUSION

Petitioner has attempted to camouflage his effort to secure this Court's review of the concurrent findings of fact by the two lower courts with a frivolous argument that this Court should construe 35 U.S.C. 282 so as to adopt a number of different presumptions of validity of patents in place of the one provided for by Congress. To do so would frustrate the manifest intent of Congress, upset the well-established construction of 35 U.S.C. 282 by the Courts of Appeals, wipe out the long established body of law pertaining to presumption and force the courts to build a new body of law around the ill-conceived set of regulations proposed by petitioner for the purpose of validating his improperly issued patent. Predictably, petitioner can offer no authority or rational basis for his request. Petitioner offers no reason for granting cer-

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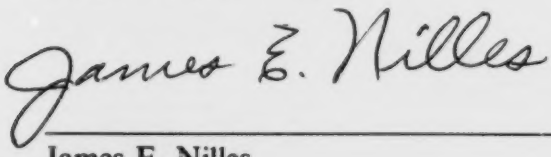
* *Walden*, by Henry David Thoreau, Bramhall House, New York, W.W. Norton & Company Inc., 1951, P. 346.

tiorari that even colorably approaches any of the considerations for granting a petition for certiorari expressed in this Court's Rule 17. The petition therefore should be denied.

Dated this 8th day of June, 1984.

Respectfully submitted,



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